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## ECONOMIC POLICY, ORGANIZATION, MANAGEMENT

### ECONOMIC DATA DISTORTION DEPLORED

Moscow NOVYY MIR in Russian No 2, Feb 87 pp 181-201

[Article by Vasilii Selyunin and Grigoriy Khanin: "Cunning Figures"]

[Text] Several years ago a driver had written to a central newspaper. The reader was informed of an interesting fact. A team of drivers was transporting the products of a footwear factory. Out of interest they added up per the waybills the weight of the load for the day and divided the result by the quantity of footwear transported. It turned out that one boot weighed an average of 12 kg....

Figure-padding in freight motor transport was appearing half a century ago. At that time it was not possible to properly estimate if only an approximate freight turnover figure, and a clearly overstated value was taken just to be on the safe side. The checks of the inspecting authorities show that the true volume of trucks' transportation constitutes barely 20-30 percent of that shown in the accounts.

Were the distortions of economic information confined to freight motor transport, we would somehow or other survive this misfortune: this sector's share of the creation of the social product is relatively modest. But, unfortunately, such a phenomenon has assumed extensive proportions, and it is now easier, perhaps, to name sectors where the distortions in accounting are slight or do not exist at all.

Until recently railroad transport was a model in this respect. The volume of the shipments there are easily checked by the weight of the products made in the country so there is no reason to suspect the railroad workers of figure-padding. And such is difficult here, and easily uncovered. In addition, traditions of honest statistics have operated since the end of the last century in this sector. Unfortunately, the situation has begun to change for the worse here also in the past 3 years. But we will return to this.

Statistics in agriculture can be trusted. Procurement officials are concerned to pay somewhat less for the products and for this reason are inclined rather to understate than overstate the volume of procurements. Of course, even here the situation is not ideal. Not that long ago very large-scale figure-padding in cotton procurement was revealed in Uzbekistan.



In industry power-generation data are reliable. The recording of kilowatt-hours is automated, and we simply cannot imagine how it is possible to be a smart operator here. The information on production in ferrous and nonferrous metallurgy and in construction materials industry is sufficiently objective.

Why, then, is the situation in some sectors quite felicitous, but in others the accounts cannot be believed? It is important to find out. After all, if we wish to eradicate distortions of economic information in earnest, it is first necessary to ascertain where, in which sectors, the forgery needs to be sought.

The product volume in rubles serves as the summary indicator of the scale of production in industry, and not only there, what is more. The vitality of this indicator is understandable. In order to determine how much we all together have done in a year or a month we need to reduce the entire product to a common denominator, so to speak. Adding buns and tractors is easiest in rubles. Indicators other than money have not been found (there have been attempts, but without success).

When fulfilling a plan is difficult or altogether impossible (this is sometimes the case, alas), making up the shortfall in rubles is conceivable in two ways: simply padding reality (pieces, tons, meters, kilowatt-hours and so forth) or raising the price of each unit product. The first way is dangerous and a criminal offense. The second way is much simpler and safer. But different sectors are in manifestly unequal positions here. Worst off are the steelworkers, power engineers, coalminers and construction material manufacturers and, partly, chemical workers, in a word, workers of the raw material sectors. Their product selection is stable, and new types of products appear infrequently. And the wholesale prices of old products have long been established and recorded in price lists, and violating them is just as ill-considered as direct figure-padding. Nor will the customer pay more than what has been established. The situation is different in manufacturing industry--in machine building, for example. Of course, here also a long-assimilated product sells at the fixed prices indicated on the price lists. But the product selection here changes rapidly. In the last 5-year plan the machine builders assimilated on an annual average the production of approximately 3,000 types of new products (for comparison: all the other sectors of industry together, only 700 types a year). Naturally, there are no prices for these items on the price lists, they have to be determined from scratch. And this is a lengthy business--it sometimes takes years. In order not to impede technical progress, which is slow as it is, one-time and provisional wholesale prices are determined for the novelties. What freedom there is here for the devotees of an easy life! There is no difficulty getting any price. And the constant price, which is determined subsequently, is usually little different from the provisional price.

Catching the culprits is quite difficult. They have at the ready a magnificent excuse: the new product is better than the old one, naturally, and costs more. However, the price usually grows to a far greater extent than the improvement in the product's consumer properties. The conventional lathe manufactured by the capital's "Krasnyy proletariy" Plant, say, costs approximately R5,500, the same lathe with a numerical programmed facility, R40,000, and one fitted with

a robot, R70,000. To what extent, however, is the machine fitted with all the wonders of technology more productive than the customary lathe? By a factor of 1.5. Consequently, the price should increase by a maximum of a factor of 1.5, otherwise the new equipment will be unprofitable to the customer. But just try telling this to the plant workers, they will prove as plain as a pikestaff that they are still not asking enough for the innovation. Initially the outlays on its production are unusually great and are not covered even by a very high price. Who in this case would turn technical progress into a loss for himself? However, throughout the world the expenditure of this period is compensated thanks to the profit from traditional, well-assimilated products which have been put into series production for no one purchases a novelty at an insane price, and the manufacturer could go bust.

Figure-padding and price manipulation are the most obvious ways of distorting information. But there is one more, concealed, way. In 1985 product quality was inspected in the form of an experiment at 33 enterprises by officials of the USSR State Committee for Standards in addition to the supervision on the part of the plant technical inspection departments. Initially the outside inspectors were rejecting as defective up to 80 percent of the products....

Even rough estimates show that the overall magnitude of the distortions in manufacturing industry is great. Let us cite a calculation which, if desired, may be checked by any reader with the "USSR National Economy" yearbooks. The machine-building product in the period 1956-1975 in cost terms grew by a factor of 9.36. But if we take the manufacture of tractors, motor vehicles, railroad cars, diesel engines, electric motors and a further variety of products by piece or in other physical indicators (we took 48 types of machine-building products altogether), the average growth constitutes a factor of 4.24. Also a considerable value, of course, but quite a long way from the cost increases. Calculations by more precise methods (per approximately 100 types of machinery and equipment) persuade us that in the period 1976-1983 the gulf between the indicators deepened: in physical units the production of equipment increased in this period 9, but when computed in rubles, 75 percent. Only the second figure is recognized officially, and it is in accordance with this that the rate of development of machine building is judged. The rate is, of course, magnificent, it is unclear merely where on earth the colossal production increments have got to. It is calculations in physical terms which provide the answer: it is a question of machines which were nonexistent.

But such calculations were our private undertaking. Something similar, however, takes place in management practice also. There is in this connection tacit understanding, as it were, between the planners and industrial workers: sectors in which it is difficult managing unrealistic production volumes are given fair plans; the quotas for machine builders, for example, pertaining to product increases in rubles are much higher. The calculation is simple: there must be some additions remaining even after the exclusion of the paper increases. There is nothing improbable in the assumption of a tacit understanding. The planners have not, after all, studied life from just economics and statistics textbooks but the majority themselves once worked at enterprises and in ministries and are excellently informed as to accounting wiles.

Nor are the construction workers lagging behind the machine builders and auto workers when it comes to data distortion. They do not have wholesale prices in the strict meaning of the word. Construction projects are unique, and individual estimates are drawn up for each one. If the foremen cannot keep within them, money is added. A reason for the increased costs is always to hand: this was not taken into consideration, that was forgotten.

Statistics show us a continuous growth in the scale of construction. The amount of construction and installation--essentially the same gross reference--serves as the indicator of the successes. It incorporates the cost of the resources consumed and the addition created by live labor. Put more simply, the construction workers are respected for having consumed (assimilated) much money (an amusing detail: this indicator was introduced to the practice of planning and accounting at the start of the 1930's. As was said at that time in the directive document, was introduced provisionally, until a better indicator was found. A better one was not found). Per such a reckoning, the volume of construction-installation operations throughout the Fifth Five-Year Plan (1951-1955) constituted R52.1 billion, while in the last decade more than R60 billion have been assimilated annually. And the USSR Central Statistical Administration notes in respect of these figures, what is more: data adduced in comparable prices.

The dynamics are astounding. However, in accordance with modern ideas the growth in the volume of construction is not in itself an achievement. The change toward an efficient economy means a simple thing: it is necessary to consume carefully the four resources employed in production: it is necessary to use per unit of end product less live labor, fewer subjects of labor (raw material, intermediate products, energy resources) and less fixed production capital and, finally, spend less in the way of capital investments per unit increase in production. Everything has been enumerated here, you will not be able to think up a fifth resource. But in order to consume fewer resources per unit increase in production (ultimately per additional ruble of national income) it is necessary for the same money to introduce more new capacity. If the sum total of expenditure grows, real capacity must be added even more more rapidly. Then the economy may be deemed efficient.

For a long time events have been developing in the reverse direction. A quarter of a century ago the country was annually introducing no less and sometimes more capacity for the production of electric power, pig iron, steel and merchant bar products and for coal production than in 1983. And this given the tremendous increase in expenditure, on construction for production purposes included. The situation became particularly complicated in the 10th Five-Year Plan, that is, in the latter half of the 1970's. The Novosibirsk scientists K. Valtukh and B. Lavrovskiy have calculated the real introduction of new capacity in physical indicators (1) (let us explain what this means. If, for example, a mine has been built, it is determined how many tons of coal it is capable of producing in a year, if a power station, how many kilowatt-hours it generates in a year). All told, the experts took 59 types of capacity. This list practically encompasses all new production facilities which had been commissioned. And? Less capacity of 42 types had been commissioned in the 10th Five-Year Plan than in the Ninth. Fortytwo out of 59! This displeasing process continued later also. In the period 1981-1983 there



was once again an absolute decline in the introduction of enterprises for the generation of electric power, the production of coal and iron ore and the manufacture of steel, pipes, fertilizer, plastics and much else. Altogether a decline was observed in respect of 38 types of new capacity out of the 55 considered. In a number of sectors the additions did not make good even the loss of old capacity, which had served its time and was due to be written off.

We have been making these calculations for 10 years now and can confirm the findings of the Novosibirsk economists. Economic planners have "missed" the abatement of the investment process not least because statistics have, as if nothing were wrong, signaled success in construction--the bulk cost indicator has grown rapidly.

Mistakes in computation of product volumes entail a long train of distortions in respect of other economic indicators also. All information becomes shaky and conjectural. Thus additions when estimating capital and its yield distort, in turn, information on prime costs, profit, profitability and depreciation allowances. But the source bulk indicator of products all the while continues its dirty work. It disfigures the labor productivity accounts. Productivity means the amount of products in rubles manufactured in a year by the averaged workman. The numerator, consequently, contains the same volume of production, the denominator, the number of persons employed. There is no point distorting the denominator, but the numerator is, as you understand, wrong. Consequently, labor productivity in the accounting will be overstated exactly to the extent to which the actual product volume is exaggerated.

Have you noticed how all the errors are intertwined? The distortion of the product volumes has spread to estimates of productivity and capital and from them to all the accounts figures. There is nothing to marvel at here--in economics everything is interconnected. But it is for this reason that it is difficult bringing order to bear in statistics. We cannot, say, today purge of inaccuracies one indicator or one sector and tomorrow tackle others. In that way we would be in even more of a mess.

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For planners figures and statistics are just the same as a map for the seafarer. A ship would not get very far if the shoals and reefs were wrongly plotted in the navigational directions. In economics imprecision of the "navigational directions" is even more costly.

We shall relate one serious story. The events with which we will be dealing are so significant for the fate of the country that the reader has a right to know about them. For our subject, however, it is instructive that forming the basis of a series of fatal mistakes was an incorrect analysis and ultimately several distorted figures.

The winter of 1984-1985 will long be remembered by the railroad workers. The engineer often could not see the track in front of him and would ram the snowdrifts blindly. We were shown photographs in the Ministry of Railways: narrow tunnels of track with walls of snow on the sides twice a man's height. We had not previously seen such a sight in the Transpolar region even, and the

shots had been taken in the central belt of Russia. There were instances of the passengers of snowed-up trains being taken food by helicopter. On the vast polygon of main lines traffic had slowed sharply and freight could not be pushed through. Blast furnaces worked at half-strength. Shipments of coal, timber, fertilizer and fuel declined. Fuel stocks at power stations were assessed in hours and minutes. Enterprises were put on special power-supply hours.

Under these conditions the railroad workers did everything that was humanly possible. Up to 200,000 men worked daily on clearing the track, frequently without sleep and rest.

When the snow melted, it was time to calmly grasp the lessons taught by the raging of the elements. They had merely spotlighted and exacerbated to the utmost the ailments which transport has been suffering for a fair time now. A chance to talk with First Deputy Minister V. Ginko presented itself. We asked a simple question: could the railroads transport in a year over and above the plan... well, if only 30 million tons of freight? A negligible figure, we would note, it not constituting 1 percent even of the volume of shipments. The executive answered with a definite "no". But what if it had been necessary to increase transportation by hundreds of millions of tons?

Yet in the difficult year for transport of 1985 there was a shortfall in coal production of just over 70 million tons compared with what had been envisaged by the original quotas of the 5-year plan. Less metal, cement, fertilizer was produced than planned.... It's an ill wind, as they say: the railroad workers did not have to transport these hundreds of millions of tons of freight.

Let us ascertain what is happening in railroad transport. We were helped in our research by chance. V. Pankrushin, deputy minister of ferrous metallurgy (a railroad engineer by education, incidentally), has, it turns out, long been pondering these matters. Viktor Ivanovich suggested the idea of the analysis, and we worked out the procedure together with him.

For an evaluation of the situation in transport there is one key indicator--car turn-around time, that is, the time from its loading through its next loading. The longer the turn-around time, the fewer the runs each car can make in a year. Consequently, more cars are needed to transport the same quantity of freight. For understandable reasons in that ill-starred winter the turn-around time was slowed to below the customary time, and there came to be an acute shortage of empty cars. The leaders of the Ministry of Railways sounded the alarm: the clients, they said, were dragging out the freight handling. There were grounds for the complaints. Per the norm, the consignee is obliged to empty a car in 7 hours on average, but in practice an extra hour has been taken for two decades now. Day after day throughout the winter Minister N. Konarev (and not just he alone) conducted deliberations by wire on an acceleration of freight handling.

There was some effect, of course, but it cannot be said that it was very appreciable. Why so? In order to evaluate the significance of the extra hour taken up in freight handling we traced the transporting operations in which the car pool was engaged. An auspicious period was taken for the analysis,

when neither drifts nor frosts were observed. This is what was shown by the calculation, which was not repudiated, incidentally, by Ministry of Railways specialists either. Out of 100 cars, at any given moment there are directly in motion only 22. A further 10 cars are standing at intermediate stations (this is normal--freight cannot be carried without stops). Nine cars are involved in materials handling at the clients' on a legitimate basis, and a further 1 the same, but illegitimately inasmuch as the consignee has not coped with the normative timeframe.

So it was this last car, the sole one out of every 100, which was the reason for a long "cold war" with the clients, it being as if this were the only one. But we counted in operation 42 cars out of 100. Where are the remaining 58? They are idling in Ministry of Railways facilities. Is it not rather many? And what is all the more displeasing is that this number is growing. In the auspicious year for transport of 1983 a car turned around in a time 34 hours longer than in 1965. The slowdown occurred solely on Ministry of Railways tracks. The railroad workers are reluctant to notice these 34 hours, they are emphasizing the sole hour spent by the clients over and above the norm. The annual number of trips per car fell in this time from 70 to 55. Given the growth in transportation, there came to be a chronic shortage of "packaging".

Let us be objective. It was not the ill will of the transport workers which slowed down the advancement of the freight. A further analysis ascertained that the traffic capacity of the lines had been exhausted. That severe winter showed graphically the menace of this: the station track intended for the formation of trains and shunting had been clogged with cars. On certain legs this had led to the paralysis of transport. It was clear that a certain limit of saturation of the lines with rolling stock had been reached. Extra cars would not increase transportation but merely slow down traffic.

Consequently, the capital investments allocated the sector need to be directed preferably into the electrification of freight-heavy arteries, the laying of secondary track, the development of the station facilities, in short, into an increase in the lines' traffic capacity. But the ministry leaders are sticking to a different strategy: give us more cars. The draft plan for the new 5-year period was made up with this aim in mind. The sector insisted on a 1.6-fold growth in capital investments. In accordance with USSR Gosplan drafts, the investments had been increased, but to a lesser extent. What would the railroad workers sacrifice? Whatever you wish, only not the orders for rolling stock. On the other hand the ministry was easily content with the modest sum for construction-installation operations. Yet this part of the investments decisively influences the lines' traffic capacity. It would seem that yet another 5-year plan will be lost for normalization of the situation in transport. But forestalling trouble is always simpler and cheaper than making up for what has been let slip. With every year lost the need for outlays will grow inexorably. And they cannot be avoided--the transport product cannot be replaced by another and cannot be bought for currency.

Proving their case, the sector's leaders showed us the car records. They confirm: the average daily run of a freightcar from 1959 through 1984 increased 60 percent. Naturally, this magnitude cannot be increased indefinitely. The use potential of the rolling stock is seemingly at an end,



and it needs to be replenished. In reality, as simple calculations showed, the run in this period increased only 5.2 percent. One would need to want this very much to be out by a factor of 11.

Besides the outright juggling of the figures, the adduced comparison contains a distortion which is cleverly disguised, such as to be not immediately noticeable. Why is the present time compared with 1959? The reader will involuntarily infer that as of that time a run has grown continuously and is now close to the limit. This was not the case. The run really did increase, but up to 1971, but then began to fall off markedly. If we count from the highest point ever reached by transport (1971), in 1984 the run indicator had deteriorated 8 percent and was not forging ahead, if only unhurriedly. What emerges? The railroad men report: in quarter of a century we have improved car use. But it is something else that needs to be reported: for three 5-year plans now we have been making increasingly inadequate use of the rolling stock.

The records go on to say that one-fourth, and according to another paragraph, one-third of the pool is made up of obsolete and worn cars built prior to 1964. So, one fourth or one-third? But let us not quibble at trifles. Both figures are incorrect. Information concerning the manufacture and foreign purchases of the cars is published. It is sufficient to solve a simple problem of addition, and it will be clear that from 1965 through 1985 the Ministry of Railways acquired by no means fewer cars than exist currently throughout the pool. An in any way noticeable proportion of obsolete cars may have taken shape given that the sector had rejected as defective new cars en masse, keeping the old ones working. We have too much respect for the railroad men to assume such an absurdity.

Having easily evaluated the significance of the protested figures for the conclusions contained in the records, the above-mentioned First Deputy Minister V. Ginko sent us to the author of the document--V. Kalashnikov, at that time chief of the Car Depot Main Administration. As it turned out, the latter had merely hurriedly signed the records. The writers were summoned. It transpired that they had simply taken the figures from some research institute study. They readily acknowledged our calculations, however. Yet the false figures had been reiterated many times over subsequently in correspondence with the Gosplan and communicated to even higher authorities. Quite important decisions were adopted with regard for them.

Nor can it be a question of the specialists of the sector having honestly erred. They had their own interest. Imagine that the ministry wanted to channel capital investments mainly into the development of the lines' traffic capacity. Laying secondary track, electrifying the main lines and extending the station track at a time of excessive strain on the lines are difficult. Traffic would most likely diminish for a certain period--the construction workers would be in the way of the operating staff. Who knows, you could be censured: you have been allocated tens of billions of rubles and you have cut back on transportation! One needs courage to reply: we know and promise no changes soon, but there is, all the same, no other way. Demanding new cars, however, is much simpler....

Without accurate figures, anticipating events is simply inconceivable--the plans would be merely things in themselves, life without purpose. Let us mentally take the place of the planner. He has before him a report: some sector or other increased production 40 percent in the last 5-year plan. The planner will hardly set for the future a lesser increase, although deep down he suspects that the report is inflated. And who would allow him to take liberties! It is explained to the skeptic right off: set them an increase of 20 percent, they will reach this figure with prices alone, and the actual manufacture of the product could even decline, is this what you want? No, the planner does not want this. Imposed on the inflated plan in rubles is physical reality--so many tractors, turbines, generators, machine tools and other good things. They may now be allocated among future consumers. In accordance with the bulk target, labor productivity, prime costs, material consumption are calculated.... On paper all is fine and wonderful. There are no arithmetical errors, the balances link up, proportions all in order.

It is later that the sinful life begins. Upon inspection industry will not have produced one-fourth of the scheduled additions in physical reality. This is not an assumption. For example, in the last 5-year plan the planned increase in coal production was 54-58 million tons, the actual increase constituted 10 million. It was anticipated that the production of rolled ferrous metal would increase by 14-17 million tons, in practice the addition was 5 million. The manufacture of cement rose by 6 million tons given a quota of 15-17 million. Those who wish may independently continue the comparison of plans and reality--the quotas for the 5-year plan were published, the accounts also.

Thus it was necessary to reshape the plans while on the move and adapt them to actual resources: a shortfall in the supply of cement and timber, cut back on construction, steelworkers in arrears, lower the machine builders' quotas. What cannot be cured must be endured. But what about foreign partners? They are not concerned about our objective difficulties. They need to be supplied in physical terms ton for ton, piece for piece.

Disregard for figures could complicate supervision of fulfillment of the present 5-year plan also. We will indicate just one danger. As is known, the new plan is literally imbued with the ideas of technical progress. The machine-building product serves as the material exponent of progress. This key sector has now been given emphatic priority: the machine-building complex is to increase production 43 percent, all the rest of industry, approximately 20 percent. A more than twofold preferential increase. But we already know that machine building means record setters in respect of the inflation of wholesale prices, in accordance with which the rate of development is computed. According to our calculations, in each of the four preceding 5-year plans the growth of prices, which was not taken into consideration but which existed in practice, nonetheless, in this sector fluctuated within the limits of 27-34 percent. What if this is repeated? Of the 43 percent planned increase in the machine-building product, about 30 percent could be obtained on paper, without any effort. The accounts will show fulfillment of the plan and signify a major structural shift toward machine-building, but in fact the planned preferential increase might not occur. Our only recourse then would be to bitterly complain: the intention was right on target, it would seem, and it was

implemented, but once again no real result. Let us hope, however, that supervision will now be different. It was no accident that in the report at the CPSU Central Committee June (1985) Plenum M.S. Gorbachev called the manipulation of prices an extraordinarily dangerous trend and emphasized: "The artificial inflating of prices will not cure economic illnesses but merely corrupt the workers and impede technical progress."

Data distortion is, in our view, the principal cause of the commodity-money imbalance (the population has more money than there are the necessary goods on sale). After all, a paper product is paid for in real rubles. It is estimated that in machine building the fictitious growth of production constitutes at a minimum 5 percent per annum. For such an increment a 3-percent increase in the wage fund is authorized, and this takes place. The additional money is distributed, but nothing has been produced for it. But where is the balance of money and goods to come from?

It is hard to believe, but, it turns out, it is possible to live comfortably producing absolutely nothing other than figures. Here is a case which we once investigated. In accordance with a contract the Moscow "Elektrosvet" Plant was to manufacture and ship out hundreds of thousands of rubles worth of lamps, but the Mosgorelektropriborsnabsbyt (not a word but the crankshaft of a multicylinder engine!) undertook to take them into its warehouse, pay for them and subsequently trade them on its own behalf. However, not one lamp reached the warehouse--the plant, as before, sold them directly to the clients. It was more convenient this way. Only per the documents did it appear that the enterprise had sold the products via a second-hand dealer. Meanwhile the contracting parties--the plant and the suppliers--started an argument by correspondence: with whose transport to convey the goods, what the permissible breakage of the products en route.... Excuse us, what transport, what breakage? After all, it was, how to put this, only the shadows of the lamps which were transported.

Before drawing up a similar contract of sale, Gogol's hero, as is known, deemed it necessary to ascertain: does this deal correspond to the intentions of the state? Let us ask this question also. A contract reflects entirely mundane interests. If per the documents the lamps go not directly to the consumer but via a broker, their full cost is included in commodity turnover twice (first purchased, then sold). The payrolls and the wage fund of the supply organizations depend on commodity turnover, and the increase in labor productivity among the suppliers is evaluated and much else is considered per the growth of commodity turnover. On paper the merchants, may they be forgiven, appeared the foremost of the foremost: the suppliers produced R4 profit per R1 of wages. The payrolls grew from year to year: since a goldmine for the national economy has been found, economizing on the breadwinners would be a sin. No special education is needed, however, to understand that no profit had been created here at all. The consumer was paying the suppliers for nothing. The wholesale price of the lamps grew by the value of the markups, and there was an appearance of a general increase in production. Everyone is content, everyone is right, the public purse merely is to blame, unfastening salaries for spongers. The average ceiling figure is truly manna from heaven for bunglers and thieves.

Economic science does not enjoy great authority among the public. We have not made great discoveries. We do not have our Anokhins, Kolmogorovs, Semenovs and Kapitsas. We shall be self-critical--there is a fair amount of truth in the popular joke: two economists--three opinions. With astounding facility our brother substantiates every conceivable reconstruction, reorganization and new indicator, but come different times, he castigates them with the same cold fervor. We have ceased even among ourselves, seemingly, to investigate the impetuositities performed by this man of learning or the other, if only to "go with the flow". Whereas in the 1920's the best people became economists (even today we are proud of the wards of the higher school of those times), we are now being joined only by undistinguished persons.

Radiant hopes were placed in the use in economics of mathematical methods and computers. Today this vogue has subsided. Because, particularly, there is no mathematics without precise figures. Inputting a computer with false data has the same success as feeding a cow sawdust. There will certainly be no milk.

Undoubtedly, not all economists are bad. There have been and are among them people of high professionalism endowed with a sense of civic duty. The attitude toward the dependability of the information most determines the importance of the economist. When it was proposed that science substantiate the latest reorganizations and write more about the achievements, both courage and skill were required to honestly give advance notice of the real trends of the development of the economy. Decorations were not handed out for this, just the opposite happened.

The struggle against data distortions is a fascinating page of the history of national economic thought. We would recall certain instances and at the same time name several good names. For reliable figures these people used to risk all. And they serve for us as an example and support. It is not their fault that the struggle for true figures has been protracted....

Serious distortions of information were detected in our national economy in the latter half of the 1920's. Prior to 1925 statistics had computed the development of industry roughly as is done to this day in the majority of countries: the data on the production of products in physical terms in the preceding year were compared with the same information for the subsequent year. But there are many types of products--there are currently approximately 24 million in our country. Clearly, collating within a reasonable amount of time the manufacture of all of them is inconceivable. Only a small proportion of them are used for comparison, but necessarily such as satisfactorily characterize the overall rate of development of industry. In this sense an excellent, entirely admirable indicator is the production of electric motors individually and in total capacity. Since this is the main type of engine in industry, it may boldly be assumed that the manufacture of equipment for industry has not increased to an extent greater than the growth in the production of the motors. It is usually sufficient to take several dozen, as a last resort, several hundred such key products in order by long-known statistical methods to deduce the overall rate of development of industry. Observe, the calculation is made first by piece, ton, meter and other physical



units (the total is subsequently expressed in strictly comparable prices). The result obtained is for this reason called the index of the physical volume of the industrial product. If the index of the present year compared with last year equals 1.06, this means that production grew by a factor of 1.06 or, which is the same thing, 6 percent.

At that far-off time the total figure of the index was of interest to society as a whole, but no one in particular. The situation began to change as management was centralized. Enterprises came to be given a directive plan, in respect of the total production volume included. Since there was a plan, this meant also a report on its fulfillment. The report included all products without exception. The overall rate of development was computed from the sum total of plant reports. At first sight this method of accounting was more accurate--it was not individual products selectively which were calculated but everything that had been manufactured. It was very soon revealed, however, that the reports were being exaggerated. In 1926 F.E. Dzerzhinskiy, chairman of the Supreme Council for the National Economy, observed: "I maintain that the figures you have been given by the trusts are inflated, that they are fantastic. The accounts which we are putting together are fantasy and skilled lies.... Given this system, it transpires that you can lie to your heart's content" (2).

It is understood, we hope, where the paradox here lies? The accounting was now being conducted not in physical units, as before, but in rubles--the quota for the plant in respect of total production volume could not be expressed other than in terms of cost. In this case the accounts were reliable given two conditions: the wholesale prices were constant, the product list also. But this was not the case--otherwise stagnation would have been observed in the economy. And it was precisely in the latter half of the 1920's that a rapid renewal of products began. The new method of evaluation became increasingly less reliable.

Specialists from all departments and regions of the country assembled in January 1928 at a conference on industrial statistics. Not one participant supported the new method of accounting. We stress: not one, USSR Central Statistical Administration officials included. The dependable old method was preferred. But actions did not follow the words. And it is understandable why. Since the production volume for enterprises, main administrations and all of industry was being planned in rubles, it was necessary to verify fulfillment. But how to verify other than by the same cost indicator? If the accounting was being done by two methods--old and new--which account was to be believed? After all, one and the same enterprise could simultaneously be both a pacesetter and a laggard.

True the People's Commissariat for Finance Business Research Institute under the leadership of Ya. Gerchuk continued to compute physical volume indexes. The USSR Central Statistical Administration determined by the same method on the initiative of the prominent statistician M. Smit the change in labor productivity, but only for research purposes. The indexes of Gerchuk and Smit deviated from the official accounts--increasingly sharply over the years. Two statistics, as it were, emerged. One gave notice of the tremendous speeds of

industry, the other, of more modest achievements. By the start of the 1930's computation of the indexes was wound down.

Meanwhile wholesale prices galloped, the annual growth thereof being measured in double digits. The First Five-Year Plan was under way. The product selection was renewed at a headlong pace, and new sectors of industry were arising--ideal soil for the growth of prices.

Yu. Berdichevskiy's booklet "Labor Productivity Accounting and Planning" with a foreword by the future academician S. Strumilin was published in 1930. The author, chief of the planning department of a large-scale machine-building plant in Odessa, was familiar with the consequences of unreliable accounting, and not by hearsay. Labor productivity at the plant, if computed by the generally accepted method, had risen, according to him, by 90 percent in a year. But if the growth of prices were excluded, by 10 percent. The author is embarrassed by the "inadequate conclusiveness and technical-economic substantiation of all the calculations. Whether we take determination of a labor productivity growth target for an individual enterprise or whether we take the same for a group of enterprises, for an association, the sector and so forth, we equally remain in the realm of navigation and guesswork. In the rest of industry, on the other hand, in questions of labor productivity planning obscurity, tentativeness and fantasy reign." A year later Soyuzselmash executive Yekhovitch adduces in the newspaper EKONOMICHESKAYA ZHIZN the striking calculation that in cost terms the volume of production in the sector had since 1913 grown by a factor of 9, but the number of man-hours worked, only twofold. How could this have been? If the low skills of the workers (yesterday's peasants) at that time, the inadequate diet and the shortage of equipment are considered, hardly more products than in old Russia would have been produced in an hour of labor.

The Road Transport Central Administration reports on the sector's work in 1930: "How much was actually transported is not known precisely.... It has to be acknowledged with all candor that we do not know what kind of business we lead." Yet reports on freight turnover were published conscientiously, only, as we can see, they were not believed by the authors themselves.

There was at that time essentially no one to fight against the deformities in statistics. The USSR Central Statistical Administration was liquidated at the start of 1929, and a department was set up in the Gosplan in place of it. Statisticians were subordinated to the planners in order that they might not take liberties. But life cannot be deceived. Not only the cost but also the physical indicators could no longer be believed. On the kolkhozes and sovkhoses the grain harvested was often used to compute... the planned figure, at best, the so-called biological harvest. We found further the following method of measurement: the accountant approaches the field, throws his cap at random, and where it falls, there measures out a square meter, collects the ears, weighs the grain from them--this is the harvest. As to how much there will be in the granary, this is your business, you will surrender to the state per the biological harvest all the same. The method was introduced in the First Five-Year Plan.



The accounting in physical terms was unreliable in industry also. The Leningrad Metal Plant counted as part of output defective work and incomplete products. The resulting production growth was astounding. Meanwhile despairing telegrams were being sent from the power station construction sites: the steam turbines are no good. An inspection showed that the actual manufacture of turbines was four times less than reported.

The turmoil in statistics had a negative influence on the economy. Urgent measures were adopted toward the end of 1931. The Central National Economic Accounting Administration (CNEAA) was set up. It was still, it is true, part of the Gosplan, but had a certain autonomy. The new body selected personnel centrally and locally. Some of them were young specialists. Subsequently many of them would become famous scientists--Ya. Kvasha, S. Kheyman and others.

Heading the CNEAA was V. Osinskiy. Special mention should be made of him--the statistical service has not since had a leader of such importance. Lenin himself called Osinskiy a tremendous force. Valerian Valerianovich had begun to comprehend economic sciences in Russia, but as a professional revolutionary he had been forced to emigrate. He studied in the best universities of Europe. In the motion picture "The Vyborg Side" the storerooms of the State Bank, we recall, were skillfully managed by the worker Maksim. The reality was somewhat different. The party had entrusted the most difficult task of mastering the monetary and banking system to the first-rate economist Osinskiy. The bank's chief commissar was at that time 30 years old. In December 1917 Osinskiy was leader of the Supreme Council for the National Economy--the country's economic headquarters. Deputy people's commissar for agriculture, manager of the first USSR Central Statistical Administration, ambassador plenipotentiary in Sweden, deputy chairman of the All-Russian Sovnarkhoz--such were certain landmarks of his restless life. In the mid-1920's he was director of the World Economy Institute, which exists today even.

Once again heading the statistical service, Osinskiy declared war on distortions of information. Under him the statistical journal USSR NATIONAL ECONOMY began to appear once again (the former journal VESTNIK STATISTIKI had been closed down in 1929 simultaneously with the liquidation of the Central Statistical Administration). In the first issue the CNEAA leader wrote: "The struggle for true figures is becoming... a principal slogan of the current period in the field of accounting.... We are taking the field... 'for true figures'."

Such were the words--struggle, field. As if at war. This was a war--with victories and defeats and with considerable sacrifices.

The new leadership began to bring elementary order in figures to bear immediately. A decision was adopted on 8 January 1932 on criminal liability for the submittal of incorrect information on plan fulfillment. A few days later the Council for Labor and Defense promulgated the decree "Procedure for Computing the Prime Costs of Industrial Products". Observe: the supreme bodies of state administration were involving themselves directly in statistics, which had not been the case for a long time.

There was a pronounced improvement in the quality of the economic information--such flagrant distortions as occurred in 1930-1931 were no longer permitted. A grateful economy reacted to these measures--the Second Five-Year Plan was much more successful than the first (to which other managerial innovations undoubtedly contributed also).

Under V. Osinskiy the CNEAA once again began to compute the construction product in constant prices. An equipment inventory was made. No, Osinskiy did not work miracles. The efforts of far more influential authorities than the CNEAA were needed for fundamental changes in statistics. Nor did he have much time. In 1935 he was without any explanation dismissed. In 2 years almost all his closest associates had been arrested. Those who survived would remember to the end of their days the work under the leadership of Osinskiy as the best years of their life.

The quality of information fell at once and for a long time. Economists, some of the bolder ones, continued to insist that it was necessary to calculate products in constant prices and that for this indexes of prices were necessary, that is, figures of their annual changes (it would then be easy to calculate the true dimensions of production). A superb idea, only there was no one to calculate the indexes--wholesale price statistics had been done away with back in the 1920's.

...A USSR Council of Ministers decree on the reform of wholesale prices and the elimination of state subsidies to enterprises appeared in July 1948. This document is mentioned by all historians of our economy, but one clause thereof is assiduously bypassed in silence. The decree makes incumbent a transition to the computation of the volumes of production and labor productivity with regard for price indexes. A victory and an end to distortions of information, seemingly. But, as before, there was no one to calculate the indexes.

A further 8 years passed. A conference on measuring labor productivity was being held in the academy Economics Institute. A tremendous impression was made here by the speech of Ya. Gerchuk. We have already mentioned his name--at the end of the 1920's Ya. Gerchuk was continuing to calculate real indexes of the physical product volume when others had ceased such unpopular work. Having been dismissed from statistics, Gerchuk worked at enterprises far from Moscow and came up daily against the consequences of forgery. "One has the impression," he intelligently began at the conference, "that our entire industrial statistics in questions of the accounting of production and labor productivity are experiencing a profound crisis.... These statistics are of absolutely no use... cannot be, and nowhere for this purpose is statistical accounting of the gross and net product employed and cannot be employed."

Ya. Kvasha, a pupil of V. Osinskiy, proposed here a method for a fundamental improvement in statistics--returning at the national economic level to the computation of indexes of the physical volume, and at enterprise level, monitoring prices more strictly.

Following the meeting, a wholesale price statistics department was finally formed in the USSR Central Statistical Administration. But victory was once again let slip. The employees of the new department made life easy for

themselves: they began to take into consideration changes in the prices only of the commodities whose prices were already stable. There was no distorted information, it turned out, all was proceeding as it should. But in practice wholesale prices of new products continued, of course, to grow, which, as before, distorted all accounts and economic calculations.

Only in the past 1.5-2 years have changes for the better in statistics come to light.

4

It is related that the professor who taught the future celebrated writer Conan Doyle medicine was able to make a diagnosis by looking closely at a patient. "What is the matter with this person, sir," he would ask the quaking student. "Take a closer look at him! No! Do not touch him. Use your eyes, sir! Yes, use your eyes, use your brain!"

So also a specialist who has for many years been studying the economy detects a suspicious figure barely having glanced at it. If the consumption of materials per unit product constantly declines by an annual 2-3 percent, the expert is immediately put on his guard--such miracles in world economics over protracted periods have not been recorded. The production of products and the pool of equipment and, even more, its capacity are tightly interconnected. Let us assume that in a 5-year period capacity rose by a factor of 1.5. A larger growth in the manufacture of products is unlikely. Most probably, it would be considerably less--after all, it is still necessary to find workmen for the new machine tools and to train them. A slow business. This method of accounting was comprehensively developed by the economist V. Faltsman, and he recently published the results of his studies also: the productivity of equipment measured in terms of total power capacity grows approximately 2.7 times more slowly than the cost of equipment. This means that the reported rate of development of machine building measured in rubles is overstated by a factor of 2.7.

Synchronism is characteristic of many economic phenomena. It is most striking in the correlations of related sectors. One would need to be a very big optimist to believe that machine building had doubled production if the manufacture of finished metal had grown, for example, 20 percent. Textile and garment industry, oil-producing and petroleum-refining industry and construction materials industry and construction are so indissoluble that it is not difficult per the development of one sector to calculate the true rate in the other.

There are quite strict dependencies of a more general nature also. Determining the growth of the entire social product without resorting to cost indicators is, it would seem, inconceivable. Hundreds of sectors, millions of types of products--how can all this be reduced to a common denominator? However, all products have something in common: energy is expended in their manufacture. World experience teaches that an increase in the consumption of energy and an increment in the social product usually proceed at roughly equal speed. Ascertain how the consumption of fuel and power resources increases (statistics are dependable here, all resources have been reduced to a physical

indicator--1 ton of standard fuel), and you may be certain: you will at the same time have determined the growth of the entire social product. Your figure will be close to the truth, but very, very far from that in statistical handbooks....

Any process is characterized in the economy not by one but several indicators. Let us assume that we wish to know how the use of fixed production capital (equipment, buildings, supply lines and so forth) changes. There are no less than five indicators for this. First, the output-capital ratio, that is, the annual yield of products in kopecks per ruble of capital cost; second, profitability or annual profit in kopecks per the same ruble of capital; third, the equipment shift-work factor; fourth, use of motor capacity; fifth, the amount of idling. Since they all speak about the same thing, they should speak identically. But what if they speak differently? What kind of beast is this, one wonders, which from head to tail is 5 meters, but from tail to head, 10? The competent economist in our case will not believe the figures for output-capital ratio and profitability (price manipulation!) and will thoroughly investigate the three remaining indicators.

The search for the truth may be approached from the other end also. A forgery is not made from a sporting interest. Advantage is expected to come from it--honor, bonuses. There are many statistical indicators, but their significance for an enterprise manager varies. Some leave him neither hot nor cold. What would be the point, for example, distorting the report on power consumption? Until recently no one was held accountable for this indicator, and even now the responsibility is not great. Look for "neutral" indicators, calculate in respect of them, and you will be close to the target. However, if the same indicator has become a directive indicator, it has once again little credibility.

The punishments for lying vary also. For outright figure-padding people are tried. Not often, maybe, but the manager knows that he could be tried. And he consents to such a business only in desperation. But what about raising prices? It contains no formal elements of a crime, and no court would accept the case. There are certainly tens of times more such distortions of information than direct figure-padding.

The inflated figure has many defenders. There is someone to discredit the calculations refuting it, nor is this difficult. There are no ideal evaluations, each has its flaws. You have calculated the growth rate per the increments in the key types of product in physical terms? But have you taken into consideration the change in the quality of the products? What about the fact that the manufacture of metal-cutting machine tools in the year has declined? But, on the other hand, each machine tool has become more productive, and as a result the product volume has increased, for all that, and not declined. You have computed the dynamics of the development of machine building per metal consumption? But have you taken into account savings of metal per product?

It cannot be said that such objections are altogether frivolous. What is to be done here? It is all the better to calculate each indicator by several



methods, and if they all produce a close result, the figures are, consequently, in order.

Here it is appropriate to say a little about ourselves. One of us authors is a journalist specializing in economics. The newspaperman one day met up with his present coauthor, a scientist from Novosibirsk. It turned out that the latter had for a good 10 years been engaged solely in a search for methods of economic analysis. To compute the rate of development of industry he had elaborated 6 methods of accounting, and for construction, 3, for measuring the dynamics of national income also 3 methods and so forth. He had calculated variously, but there had been one outcome--the spread of the results had been strikingly small. We compared our findings and emphatically preferred the more complex, but also more accurate procedures of the scientist (they have been expounded partially in scientific journals). Since that time we have been exchanging information and writing together from time to time.

The reading public is more interested not in the subtleties of accounting but the reliable figures themselves. What do they indicate? Do they change fundamentally our idea of the development of the domestic economy? Perhaps not, at that. It would be more correct to say that the information which we have procured brings these ideas into line with commonsense and our experience of life. Without any statistics, anyone would say: we are living a manifold richer life than before the war--we are better clothed, we eat better, we own things about which our grandfathers and fathers could not even dream, and the majority of families have self-contained apartments. If with the aid of some time machine the workman of the 1930's could see the ordinary family of today, he would surely think that no better were needed and that whoever was dissatisfied was too well off. We do not think so, of course. The figures merely confirmed these perceptions. National income calculated per our methods grew from 1928 through 1985 by a factor of 6-7. This is by any estimates an outstanding success--there are not many countries which could boast of such a rate. But there is another aspect: the increase in income in this period was not 90-fold, as official statistics attest. This again accords with commonsense: were the reported figure correct, we would long since have been in first place in the world in terms of living standard.

But whereas the development rate even after an adjustment of the figures is generally good enough (particularly for a lengthy period), the methods by which the result has been achieved please us less. For a long time we have been successful in the economy not by ability, so to speak, but by number, more precisely, the inordinate consumption of resources. This is not caught by the generally accepted statistics, which puts them in quite an odd position. In fact, people are talking all around about an abrupt change toward efficiency--it is no longer possible to manage as before, we must obtain more products given the same resources. If, however, we turn to the published statistical indicators, it turns out that before also our national economy was developing on an intensive basis: there was a headlong growth of labor productivity, the materials-intensiveness of products was declining continually, even the output-capital ratio was rising in the not-that-distant past. Why, then, reconstruction? If it ain't broke....

But our estimates confirm an absolute need for changes. In almost all periods the consumption of material resources and fixed production capital has increased more rapidly than national income. From 1928 through 1985 the material-intensiveness of the social product grew by a factor of 1.6, the output-capital ratio declined approximately 30 percent. The rise in social labor productivity was relatively modest (a factor of 3.6).

Working thus was only possible given an abundance of resources. The strong aspect of our economic mechanism was that it made it possible to mobilize resources rapidly to achieve most important goals--for accelerated industrialization, say, and victory in the war. But even in the past the extensive method of development did not come cheaply. For whole decades the living standard fell and began to grow only in the 1950's.

As a whole, past experience is a poor assistant in an abrupt change toward efficiency. For all that, there is some point in taking a somewhat closer look at certain periods of the past. After all, if this period or the other is considered auspicious, there is always a temptation to also repeat the methods which once produced fine results.

It is the customary belief that in the prewar period the rate of development was exceptionally high. Truly, a multitude of enterprises was built, new sectors appeared and profound structural changes in the economy occurred. However, progress was confined mainly to heavy industry, construction and transport. The agrarian sector of the economy, on the other hand, experienced stagnation (as is known, in terms of the grain harvest and the head of livestock the 1928 level was reached and surpassed only in the 1950's). In the period 1929-1941 national income grew by a factor of 1.5. By no means a record pace. The biggest increase in our history in the material-intensiveness of products and a decline in the output-capital ratio were observed in the 1930's.

The national economy developed really rapidly in the 1950's. This period, we estimate, would appear to be the most successful for the economy. The growth rate at that time exceeded previous achievements. But the essence consists not just of the rate alone. All the more important is the fact that for the first time growth was achieved not only thanks to an increase in resources but also thanks to the better use thereof. Labor productivity rose 62 percent (almost 5 percent a year!), and the output-capital ratio, 17 percent, and material-intensiveness declined 5 percent. All sectors developed relatively harmoniously--not just heavy industry but also the production of consumer goods, agriculture and housing construction.

The successes in the credit-monetary sphere were impressive. Commodity-monetary balance, which had hitherto seemed unattainable, was ensured. Whereas from 1928 through 1950 retail and wholesale prices had grown approximately 12-fold, in the period 1951-1955 retail prices declined and wholesale prices stabilized. There was only a small growth of prices in the latter half of the 1950's.

As we can see, that to which we aspire today has once already been accomplished--the economy has operated efficiently for a fair length of time.



For this reason it is important to ascertain the sources of the success and separate the transitory factors from lessons which are useful today also.

Millions of demobilized soldiers entered the economy. Future experts will also undoubtedly point out that at that time there was also a qualitative change in the level of the executive personnel. After all, in 1946 even many enterprise directors had secondary and sometimes elementary education. Just a few years later this was already a rarity. There had been a marked improvement in planning, and as a result it came to be possible to hold people to account for targets being thwarted. All quite true. But we will venture if only by way of hypothesis to point to one further factor, determining, in our view. It was in the 1950's that the cult of personality was emphatically rejected and socialist democracy was restored. Man truly felt himself to be not a tool for the fulfillment of plans and designs but a creator and master of the country. At a sharp turning point in history we recognized in an instant, as it were, that, in the words of the poet, "people themselves and not the gods are obliged to look ahead". Further, for the first time the Soviet people really tasted the fruit of the economic potential, which had been growing for decades. Prosperity is pleasant not only in itself. As the same Tvardovskiy noticed, "the people are kinder and have become gentler with themselves." There was a lessening of the bitter strain, as if from great salvos. And a good spiritual disposition is not the least aspect in labor.

But the successes of the 1950's, which were not analyzed in depth, gave rise to the idea that the future was cloudless and that high speeds of development were assured. In this atmosphere rash, not soundly underpinned slogans of "catching up and overtaking the United States by 1980" and "the present generation will live under communism" appeared. However, the growth rate had begun to fall by the end of the decade even. This process lasted until 1983. The appearance of negative trends in the economy is usually dated as of the mid-1970's. According to our estimates, this occurred 15 years earlier. Determining the precise date is useful not only for the sake of historical truth. Establishing the start of the recession is of fundamental importance for an added reason. Many experts consider particularly successful the period 1966-1970--a 5-year plan of economic reform which set the goal of a broadening of enterprise independence and the introduction of full cost accounting. Official data demonstrate an acceleration of pace and a sharp increase in efficiency. If this is the case, the conclusion is obvious: the reform needs to be repeated--the result will not be long in coming.

The trouble, however, is that at that time there was neither acceleration nor efficiency. According to our calculations, the key indicators deteriorated at that time even compared with the first half of the 1960's, not to mention the 1950's. National income increased 20 percent compared with 24 percent in the prereform 5-year plan, labor productivity, 17 percent compared with 19 percent and so forth. Worse use was made of fixed production capital, and material-intensiveness increased. There was a particularly rapid deterioration in indicators in machine building; after all, the situation in this key sector predetermines the success or failure of the next 5-year plan.

We understand full well that these calculations hand the opponents of radical reforms a trump card--they tried and got burned, they will say. But the truth

must be determined regardless of how it may be used. In any event, we do not intend becoming like our opponents, who are prepared to take on trust any figure as long as it confirms their ideas concerning changes in the economic mechanism.

It is our profoundest belief that there could have been no success inasmuch as the reform was implemented inconsistently. Nor was the very idea of extending enterprise rights and simultaneously recreating in place of the sovnarkhoz ministries as bodies for the purely administrative, departmental management of production a happy one.

In addition, the reform mechanism itself contained a dangerous gene. Wholesale prices of products were determined, as before, in directive fashion. Yet the enterprises had begun to operate from profit. And it could be obtained both thanks to a reduction in prime costs and by way of the overstating of prices. An additional stimulus to such overstatement worked faultlessly: the unaccounted-for, concealed growth of wholesale prices of machine-building products, for example, amounted in the reform 5-year plan to 33 percent compared with 18 percent in the preceding 5-year period (whence, incidentally, the handsome indicators of the effect of the reform). No control from above helped, and the sole omnipotent controller--his majesty the customer--was completely removed from the determination of prices. As a result the reform broke up the old economic mechanism rather than created a new one.

Commodity-money relations and the law of value are not to be trifled with. The economist who recognizes money, chargeable credit and self-repayment is not a commodity man. These words are now respected by all. The commodity man is he who insists on determination of the wholesale price with regard for the voice of the customer and who reveres the law of value in full and not in some way truncated and transformed or somehow emasculated.

You will hardly have heard the following argument: "The law of gravity is different nowadays, quite different. In Newton's time.... Well, it would get up to mischief out of youthfulness--stroke the head with an apple or something stronger, it cannot be denied. But it controlled the planets, after all! How could it now be up to what went before--it has grown old and decrepit." Everyone understands, a joke. But the law of value also is objective and independent of our will. It is possible merely to adapt ourselves to it, but by no means to transform it or reduce it to the position of corner tenant. The experience of the 1960's demonstrated full well how dangerous such exercises are.

Economic processes, once begun, acquire inertial motion. In the 1960's the growth rate fell, but still remained relatively high--in the whole decade national income increased by a factor of 1.5. The situation became more complicated in the 1970's. In the Ninth Five-Year Plan income increased 17 percent, in the 10th, 5 percent, and in the first years of the 11th there was an absolute decline therein, and only the vigorous measures which we all recall rectified the situation somewhat: in the last 5-year period as a whole the income addition constituted 3 percent, which was less than the increase in population.

Where do the roots of this phenomenon lie? It is clear to everyone that a correct diagnosis is the prerequisite for successful treatment. But there is no accord among economists concerning the diagnosis, and with the passage of time opinions are differing increasingly.

5

We recall an occasion when in a discussion in a small audience of economists the question got around to the yield of capital investments. From our youngest years we had been accustomed to think that our country builds the most. We are now losing that priority. We are spending up to R200 billion a year, but introducing increasingly less new capacity. What, have we forgotten how to build?

As a matter of fact, the explanation has been to hand and has been adduced in the press hundreds of times. We have had to go after natural resources in rotten, uninhabitable regions, where everything has to start from scratch. You cannot build cheaply there, consequently, there remain less resources for other needs. Take Siberian oil....

When we heard this argument, one of us expressed guarded doubts. And inasmuch as we have long understood one another from just a hint even the other grasped the idea at once.

Reproaching the oilmen for excessive expenditure, we began, is base. Let us glance at the "USSR Foreign Trade in 1984" handbook. Of the R74 billion of annual export earnings, R38 billion (more than half) were obtained for oil and gas, including R31 billion for oil. Had it not been for this money, how would the country have purchased equipment, grain, clothing, sugar? In the 1970's the situation was auspicious for economic development. Exceptionally auspicious. The production of oil increased fantastically, and its price on the world market shot up. There will no more, probably, be such a confluence of circumstances. Only now are objective difficulties beginning--the production of oil has stabilized, it will hardly be possible to increase exports thereof and prices on the world market have declined threefold. And, say, for 1 ton of grain today we have to give up 3 tons of oil, although recently we exchanged practically a ton for a ton. And purchased equipment? Some R24 billion thereof was acquired in 1984. This is our principal import item. We are allowing for the fact that technology on the world market will increase in price far more than oil.

But are the capital outlays per ton of oil produced in Siberia nonetheless higher than in the old areas? Commonsense suggests that something is wrong here. We still remember the task of an increase in oil production to 60 million tons being advanced as a distant goal--the country would then, it was said, be insured against each and every eventuality. Now with gas condensate we are producing 10 times more. In the 1970's the addition alone was in excess of 250 million tons. The resources of the entire country would hardly be sufficient had capital investments per supplemental ton risen even more. Finally, it was in the 1970's that there was a restructuring of the fuel budget from coal to oil and gas. And everyone knows that developing oil and

gas industry is more profitable than coal industry--a ton of standard fuel is cheaper in terms of both capital and current outlays.

We subsequently verified these thoughts by calculations. Everything was confirmed. Fuel industry, the chief of the raw material sectors, operated highly efficiently in the 1970's. The growth of the prime costs and the capital-intensiveness of fuel, however, was merely semblance. There was simply an increase in costs in the sector in fixed capital, equipment primarily. Supplying equipment at inordinate prices, the machine builders entered as their credit profit which should ultimately have been put at the service of the oil and gas workers.

As a matter of fact, explaining the difficulties in the economy by the exhaustion of accessible natural resources and the poor climate of the new regions is a comforting, perhaps, but futile occupation. It is necessary to operate with the resources and in the climate which exist.

What, then, were the true reasons for the stagnation? There are two strongly differing viewpoints in this connection. The majority of economists see as the root of the evil the reduced efficiency of social production and the extravagant consumption of labor, material, financial and other resources. This phenomenon is explained variously, it is true--lack of order on the job, unsatisfactory planning, an outdated economic mechanism and so forth. Other thinkers (they are in the minority) believe that the present difficulties emerged as a consequence of the subsiding of the investment process in the country. This position has been substantiated most fully and consistently by the Novosibirsk scientists K. Valtukh and B. Lavrovskiy. Let us trace the course of their arguments in free paraphrase, so to speak.

The real commissioning of new capacity has been declining from 5-year plan to 5-year plan. And inasmuch as fixed production capital has become pretty much obsolete, it has had to be written off. There has also been a concealed diminution in the capital--the old equipment seemingly operates, but is not producing the due results. We have approached a point where introductions are barely covering the manifest and hidden loss of capacity and have in a number of sectors gone beyond this point. "So the real growth of capacity... is declining, and its actual loss... is rapidly growing, " the scientists write. "Both processes have as objective consequences certain reductions in the increases in capacity and, further, output, including even an absolute decline therein" (3). You may turn on the best economic mechanism and bring discipline and order to bear. There will, of course, be a benefit, but behind all that there is simply nothing on whose basis to fulfill the plans. The authors do not write such, it is true, but this stands to reason. Where is the solution? In the scientists' opinion, tangible production increases will not be achieved on the basis of operating capacity--it is already overloaded. "In order to obtain additional products on a strategically significant scale," the experts conclude, "a wholesale growth of production capacity is needed...."

But wholesale growth means the extensive development of the economy, from which it would seem that we have to escape.



We would note, incidentally, that the competing theories are based on different information. Those who believe that intensification is sufficient for accomplishing the task use the generally accepted dynamics of cost indicators. They do not do for K. Valtukh and B. Lavrovskiy (and we agree with them here). They construct their theory on data on the production of products in physical terms and the introduction of capacity again in the physical respect. Thus an apparently information problem is developing into a principal question of economic policy.

The aging of fixed capital and the reduction in the introduction of capacity constitute an indisputable fact. The idea is maturing under the influence thereof in the minds of certain economists of an economic maneuver something like the accelerated industrialization in the 1930's. National income, that is, the entire new value created in material production in a year, is divided, as is known, into two unequal parts: the larger amount goes for consumption, the smaller, into accumulation. The lesser proportion also finances construction. Thus it is proposed sharply increasing this proportion, even at the cost of an absolute reduction in the consumption fund. It will then be possible to renew and multiply production potential and thereby impart new dynamism to our economy. And in 10-15 years, say, it could again be possible to raise the population's living standard, as was done in the 1950's. In economic publications we have even encountered specific calculations of such a maneuver: the figure of a doubling of capital investments for production is given.

No easy project. The differences between the 1930's and 1980's are too great to hope for a repetition of the success. At the first stage of socialist building, under the conditions of the capitalist encirclement, temporary sacrifices were explicable. How could a similar policy be justified today?

In the 1930's the country disposed of vast labor resources, which were not that difficult to relocate--from agriculture into industry, transport and construction. Today this potential does not exist. Would it be possible, given this limitation, to sharply raise production in machine building, construction and other sectors of the investment complex, where more than 20 million persons are employed already? And if so, how to bring up to strength with people the multitude of new plants when even the old ones are idling owing to the shortage of workers? Would we not be acquiring inactive enterprises built with a strain on all forces?

Of course, the supporters of a "second industrialization" would object: the new plants, technically consummate, would save labor and all other resources. Theoretically correct, but in practice such intentions are being realized inadequately for the present.

There is one further limitation for the maneuver. We learned about it when recalculating indicators of the development of the economy by the new methods. Capital investments are financed mainly from profit. In current prices profit grows relatively rapidly. It is a different matter if we take constant prices. We have no wish to weary the reader with the calculations--they are quite complex. We shall present our findings straight away. The absolute sum total of profit per the national economy in constant prices increased up to 1965 and

then began to dwindle and by the mid-1980's had come to nothing. The deficit had until recently been covered by income from foreign trade, but, as already said, this source is now beginning to dry up. With what, one wonders, to conduct the "second industrialization"? And is it necessary? Is it true that the development of the economy has come down to the problem of fixed production capital?

The truth is always specific. The modest average values of the increase in capacity take shape from very tolerable introductions in some sectors and scant ones in others. Bottlenecks emerge in the national economy. It is they which are limiting the development of the economy. In order to ascertain them we analyzed the actual dynamics and use of fixed capital in respect of different sectors. The findings were surprising--in a number of cases they are the opposite of the settled ideas.

Let us take for an example ferrous metallurgy--truly a base sector. It has not been lacking in attention, it would seem. In the past 5-year plan the metallurgists received 3.5 times more capital investments than in the Sixth (1956-1960). And the output? In the period 1981-1984 the average annual introduction of capacity fell in comparison with the Sixth Five-Year Plan in terms of the smelting of pig iron 15-fold, in terms of the smelting of steel, by a factor of 1.7 and in terms of the production of merchant bar products, by a factor of 1.4. An unequivocal conclusion, seemingly: the metallurgists are making wretched use of the colossal resources allocated for the development of the sector. But the cost of construction is growing rapidly also. We calculated capital investments in the sector in constant prices. And? Given this sole reliable indicator, investments in ferrous metallurgy grew only up to 1974 and then began to fall. In 1984 the sector received for the first time in the country's history an amount for its development which did not even make good actual wear and tear of the fixed production capital. More simply, this money was insufficient merely for maintaining production at the previous level. Yet the manufacture of metal needs to be further increased. We would recall that in the course of recent 5-year plans the planners have been forced to lower the targets for the machine builders precisely owing to a shortage of metal.

It may be objected: metallurgy's reserves are great--the sector is making increasingly inadequate use of its potential. Yes, according to official estimates, the product yield per ruble of fixed production capital fell threefold here in the period 1955-1980. But these are once again tricks of accounting. There has been a diminution in the product yield per which ruble? Let us assume that a quarter of a century ago we built a shop for R10 million and now one further such plant, but for R30 million now. Both will have been entered in the sum total of production capital at the nominal price. The old and new capital, it transpires, are evaluated in different rubles. For a correct evaluation it is necessary to do one of two things: calculate the old capital in the present cheaper rubles or all the capital in constant prices. We have done both. It is not now difficult to ascertain how the output-capital ratio has changed. In the last quarter of a century it has not declined in the least in ferrous metallurgy. Consequently, the supposition concerning the sector's huge reserves is a myth (although, of course, it is necessary here, as everywhere, to manage more zealously).



This finding will not surprise the experienced executive nor the ordinary reader. Everyone knows that metallurgical units work around the clock. How to further increase the product yield from them here? We are by no means proposing an unchecked increase in the construction of new blast furnaces, converters and mills. Our country already produces more metal than any other. The main task is enhancing the quality of the metal. But this also requires capital outlays.

Power engineering operates close to the limit of its possibilities. Everything is hot in the said sector. We shall adduce just one comparison. At the start of the 1960's the power engineers were introducing annually 10 million kilowatts of capacity. Today it is time to abandon those units and for today's introductions to once again be 10 million kilowatts a year. That is, as much as is necessary to replace them. But the need for electricity is growing, thus it is necessary to operate obsolete capacity.

Railroad transport has become a bottleneck of the economy. And let no one be induced to euphoria by the fact that the critical situation of the 1984-1985 winter has not been repeated, that transport is fulfilling the plans and that transportation is growing. The last accessible reserve has been committed to the battle: the Ministry of Railways has ordered an increase in the static load. We will elucidate. A car, like any engineering structure, has a safety margin. If it is based, for example, on 62 tons of freight, it can carry 70 tons and will not collapse. This is now the case. A difficult decision. The cars and track wear out faster. Freight losses have increased. For example, coal is loaded from an enormous cap above the car and at current speeds it is simply blown away. Essentially transport is delivering to the consumer over and above what is customary not coal but figures. Figure-padding has appeared in the sector, which was not the case before. Ministry of Ferrous Metallurgy specialists uncovered a curious incident. The Moscow Railroad refused to accept from the "Serp i molot" Plant cars loaded per the old norm. But per the new norm none turned up: the plant fulfills relatively small orders. The railroad men proposed dual bookkeeping: for their accounts let a bigger weight be entered than in the documents accompanying the metal.

In order for railroad transport to operate steadily it is necessary, as already said, to increase the lines' traffic capacity. And this is once again attended by capital outlays.

The progress of the economy depends to a decisive extent on the development of machine building. This may be considered axiomatic. Less obvious is something else: is it necessary to increase unchecked capital investments in this giant sector? There is no other way, it would seem. According to official reports, the output-capital ratio in machine building in the period 1955-1980 rose by a factor of 1.5 almost and continues to improve. But product yield per ruble of capital cannot grow indefinitely. Even now, statistics claim, 90 percent of capacity is being used here, which is close to the permissible maximum. And if we wish to rapidly update the production machinery of the economy on a modern engineering basis, we will have willy-nilly to invest more resources in the development of the sector supplying the equipment.

But once again let us not take these figures on trust. How has it come about that in metallurgy, fuel industry and power engineering the output-capital ratio is, per the reports, falling continuously but growing in machine building? Can it be that duffers have been assembled without exception in some sectors, but in others, heroes? The solution lies elsewhere. In the raw material sectors the cost of the fixed production capital is artificially inflated as a consequence of the growth of prices of equipment and construction. The value, on the other hand, of the manufactured product is increasing slowly there, strictly in line with the true increments in production inasmuch as raw material prices are stable. Thus arises the illusion that per ruble of capital the raw material workers are producing increasingly less output. Things in machine building are different: fixed capital is becoming more costly here also, of course, but the wholesale prices of products are growing even more rapidly. As a result the output-capital ratio is apparently moving up, production potential is being used increasingly efficiently, it would seem and significant reserves have been exhausted. It is sufficient, however, to calculate the capital and product in constant prices for the beautiful mirage to disappear--the output-capital ratio in machine building not only is not improving but is even showing a tendency to decline. How can there be a question of the exhaustion of reserves when the foundries work one, at best, 1.5 shifts? The electric motors here turn little more than 1,000 hours per year--half as much as in the United States. Consequently, the equipment fitted with the motors also operates just over 1,000 hours. We would recall that there are 8,760 hours in the year.

In the period 1965-1980 alone our machine-tool stock grew by a factor of 2.5. It is now bigger than that of the United States, Japan and the FRG together. Undoubtedly, there is here much obsolete equipment, and it needs to be replaced, which will require capital investments. But we know from experience that assimilating the manufacture of innovations comes hard. There is a menacing danger that machine building will from inertia for a long time yet be producing much customary equipment and that as a result there will per manufactured truly modern machine be several traditional ones. To what will this lead? Whereas today even given single-shift work there are in industry approximately 700,000 vacant jobs, there will be millions of them. The colossal capital investments in the creation thereof both in machine building and in the sectors consuming equipment will be in vain.

This could happen even if new capacity were created for the production of new equipment. But we can act differently: at the price of a reduction in the overall manufacture of equipment (in terms of the quantity thereof, in surplus as it is) increase the production of modern progressive machinery and then operate it in at least two shifts. There already exists something close to this experience in Leningrad: the obsolete equipment is being withdrawn from operation there, modern equipment is being installed in the space thus released and it is being used in two and even three shifts. The Leningraders' initiative has been given high marks in the CPSU Central Committee Politburo and is becoming a model for emulation. Given this version, the country would save capital investments and could transfer them to the sectors which are really working to the limit of their possibilities.

There are in the history of our statistics shining chapters also. However paradoxical, their best period coincides with the most difficult years of the country's formation, when, it might have seemed, an aspiration to comforting figures could have been, if not excused, then understood. The first bright period is connected with the official activity of V.I. Lenin. Ilich himself had an excellent mastery of statistical methods and taught that it was impossible to work without objective information. Given his active support, under conditions of hunger and destruction an establishment of unprecedented proportions was created--the RSFSR Central Statistical Administration.

"We need complete and truthful information" (4), Lenin demanded and was very sharp in his opposition to what we nowadays call show. Let us quote his letter of 4 February 1922: "I would ask that you look through this very brief piece of information from Sokolnikov, which he gives me per my inquiry of yesterday. First, the information is incomplete, I demanded supplementary information, second, if it is correct, it follows that Novitskiy (secretary of the Gold Currency Commission, official of the People's Commissariat for Finance--authors) has provided us with figures which are plainly wrong. It is essential to seek the complete truth in this connection and if it is confirmed that Novitskiy has provided incorrect figures, raise in the Politburo the question of his committal to trial" (5). As we can see, Lenin considered the distortion of information, even if disinterested, a criminal offense.

F.E. Dzerzhinskiy came down passionately on window-dressing. As head of the People's Commissariat for Railways, he personally involved himself in the organization of statistics. It is instructive, for example, how he supported Ilin, an employee of the People's Commissariat for Railways and former metal worker. "To the extent that we have concealed our defects and not spoken openly about them and not analyzed them we have remained impotent and sterile," Dzerzhinskiy reported at a conference of the Railroad Workers Union in December 1923. "He (Ilin--authors) has ascertained in his chart and compared the work and expenditure of us all not in money but in manpower, fuel, material and rolling stock. I must confess that the first time that he came to me with this chart, although I am not of weak character, I could not get my bearings and told him that if his chart were to be published, this would be the greatest material for the white guards since they would point out how Soviet power, worker power does not know how to operate.... Then, when I looked into it more closely, I understood that this was the greatest discovery, although there was no kind of invention here but a simple comparison. Comrade Ilin's method is an ascertainment of what the case is in practice, and this is the start of any possibility of conducting a struggle. For this reason Comrade Ilin's name should go down in the history of the revival of our Soviet transport as an ideological and technical creator of this reconstruction.... And when we, per the method of Ilin, who operates entirely openly, also say everything openly, we will achieve results."

Dzerzhinskiy grasped the very essence of Ilin's procedure: he compared the work of transport and expenditure not in money (such accounting is unreliable) but in physical indicators--expenditure of labor, fuel, materials, rolling stock.

For the first time following a long interlude information has come to be published in the last year-18 months on the state of the economy per criteria differing from official criteria. Innovative, practically significant conclusions have been obtained precisely by the scholars who have calculated and compared the scale of production directly in physical terms or in terms of summary physical indicators (in terms of machinery's power capacity, for example, as V. Faltsman has done). Thus use is once again being made, six decades on, of, in Dzerzhinskiy's words, the "greatest discovery" of Ilin, more correctly, a classical method of statistics.

A revival of Leninist traditions in statistics began only after the CPSU Central Committee April (1985) Plenum and, particularly, following the 27th party congress. "The time which has elapsed since the congress and recent events confirm as convincingly as can be the fundamental significance of the lesson of truth about which the congress spoke," M.S. Gorbachev emphasizes. "In any situation we must recall Lenin's warning: 'Illusions and self-deception are dreadful, fear of the truth is disastrous.' The party and the people need the whole truth--in matters large and small. It alone nurtures people with a developed sense of civic duty, but lies and half-truths corrupt the mind, deform the personality and prevent the formulation of realistic conclusions and evaluations, and there can be no assertive party policy without it."

The purpose is clear, the situation for bringing order to bear in statistics is auspicious. Planners and statisticians can no longer refer to the fact that their proposals will not be understood higher up. Even before, incidentally, such references sounded unconvincing--civic and official duty should be performed regardless of whether some people will like this or not.

However, a qualitative improvement in accounting is no simple matter. False figures have become deeply embedded, and there are sufficiently many people with an interest in preserving them. There are not as yet any completely finished procedures of true accounting. It is important here to understand and recognize one objective difficulty. If classical methods of statistics are rehabilitated, it will generally not be that difficult to determine the true dimensions of production and the rate of development of industry and other sectors of the economy. This in itself is no mean feat, nonetheless, summary figures are insufficient for planning the work of sectors of industry and, even more, of individual enterprises. Drawing up plans in two indicators--current and constant prices--is conceivable, of course. But then managers would become bogged down in endless arguments as to what increase an enterprise or sector have produced in reality and what thanks to an overstatement of prices.

So what, then, cost indicators are in principle no good? Not so! Monetary indicators are perfectly serviceable where money plays an active part in the economy and is a most important instrument of the economic mechanism. Given excessive centralization and given the total planning and directive distribution of practically all resources, money does not exercise its functions, although, contrary to logic, it is preserved as a principal indicator. But whence a conclusion of exceptional importance: under the



conditions of in-depth cost accounting, when money in practice becomes an exchange equivalent, cost indicators are quite adequate. Let us take a look at the situation in practice. Let us assume that an enterprise no longer receives directive targets pertaining to product volumes and increases, labor productivity and profits. Only taxes for the exchequer are strictly regulated. Then anyone who so wishes may write out fine figures at his leisure--this occupation promises neither laurels nor additional wages. Undoubtedly, under such conditions also it is profitable to a manufacturer to raise wholesale prices for the entire life of the outfit depends on earnings and profits. But given in-depth cost accounting, the consumer would pay with his own money and would control prices better than the State Committee for Prices.

Nowhere in the world have wholesale prices ever been constantly stable. Naturally, we would continue to have to keep an eye on the level, dynamics and correlations thereof. But computation of the true indexes of the physical product volume and price indexes would no longer encounter the desperate resistance of the masses for the simple reason that the figures obtained are needed not to evaluate who has worked in what way but for other purposes--how to distribute capital investments, to which sectors to give preference, which programs to support by subsidies from the exchequer and so forth.

Our statistical authorities have not yet reorganized themselves in keeping with the spirit of the times. One has the impression that they would like to accomplish the task at a stroke. All successes are as yet being reduced to a reduction in figure-padding, but this is the least essential cause of the distortion of information. A reconstruction of all statistics is inevitable. The radical economic reforms, which have already begun, will prepare a suitable atmosphere for objective statistics. But the communication between them is two-way: conscientious statistics will create the data support for progress and change in the economy.

#### FOOTNOTES

1. See EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA No 2, 1986, pp 17-32.
2. F.E. Dzerzhinskij, "Selected Works," Moscow, Politizdat, vol 2, 1977, p 497.
3. EKONOMIKA I ORGANIZATSIYA PROMYSHLENNOGO PROIZVODSTVA No 2, 1986, p 23.
4. V.I. Lenin, "Complete Works," vol 54, p 446.
5. Ibid., p 155.
6. F.E. Dzerzhinskiy, "Selected Works," vol 1, p 404.

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## REGIONAL DEVELOPMENT

### RECONCILING INDUSTRIAL, REGIONAL, URBAN DEVELOPMENT PRIORITIES

#### Urban Development

Moscow EKONOMICHESKAYA GAZETA in Russian No 52, Dec 86 pp 15-16

[Article by M. V. Glazyrin, candidate of economic sciences, under the rubric "Restructuring the Economic Mechanism": "Territorial Cross-Section of Acceleration: Ways to Create the Economic Mechanism for the Development of a City"; first paragraph is source introduction; last paragraph is editorial note]

[Text] The enterprise and the city, the territory and the branch. How does one resolve the contradictions that arise where the "verticals" and the "horizontal" intersect? How does one achieve the optimal combination of the branch and the territorial aspects of administration?

Until now, the leading idea and basic trend in coordinating these interests and contradictions has been to ascertain the most important component elements of the city and to guarantee their proportional development. The idea is a completely sensible one, but the result of its implementation has been paradoxical: the proportions have not been improving, but the disproportions, as everyone knows, have been increasing. It has been impossible to make complete use of the large production, scientific, and cadre potential or the natural resources of the city; although the local party, soviet, and trade-union organization have been devoting a large number of efforts to the resolution of these problems. What seems to be the problem?

#### The Truncation of Administrative Functions

For a long time the economic and economic-administrative authority of the local soviets has not extended much beyond the services sphere for the public and for local industry. The predominance of the branch principle in administration invariably led to a situation in which the interests of the branch, and sometimes even of a single major enterprise, began to take the upper hand over the interests of the city and its population.

The city and oblast give everything to the enterprise: territory, the natural environment, mineral resources if they exist, labor resources, scientific-technical cadres, supplies of water, energy, food, and manufactured goods,

cultural and personal services, and an environment for the workers' participation in social-political life.

But what does the city get from the enterprise?

The traditional and extremely simplified answer is, "Not much!". And yet that is not really so!

The enterprises deliver to their city some of their output, create the fixed production and nonproduction assets and scientific achievements, transmit the advanced experience in production and social work, and develop skilled cadres. True, these completely obvious ties between the city and the enterprise do not have any legal or economic formalization.

The varied horizontal ties inevitably, but frequently in an uncontrollable manner -- that is, in an unorganized way -- arise also among the enterprises and organizations in the same city. They are influenced by the territorial proximity of the projects in the national economy and the public, and by the territorial form of organization of certain branches of the economy, primarily the enterprises in the services sphere.

Ignoring objectively existing economic ties and relations "along the horizontal" on the territory of the city led to a decrease there of very important economic functions. This is also evident in the city's lack of an economic agency that is responsible for its effective development. The local soviets, which have been called upon to act in the role of organizer and intermediary in the economic relations on the territory of the city, have not yet been coping with that mission.

#### On Social Principles!

No one is planning to belittle the role of social principles in administration. On the contrary, they must be intensified, developed, and raised to a new level. However, one cannot fail to be alarmed by the fact that the resolution of many very important problems of the city's development and the more complete use of the city's scientific-production potential has been entirely farmed out to the public, and is devoid of the organizing principle of state planning, interaction, and control. Hence a large number of additional difficulties of an economic nature lie on the shoulders of the party, soviet, and trade-union organizations.

Actually, no one really engages even in bilateral ties between the enterprises with regard to the exchange of various kinds of output, or in fixed assets, labor resources, scientific-technical achievements, or advanced experience along governmental lines on a territorial basis. True, in our country there is an extensive network of interbranch territorial scientific-technical information centers (TsNTI) under USSR GKNT [State Committee for Science and Technology]. There are republic-level institutes of planning agencies and individual subdivisions of USSR Gosplan and USSR Gosstroy. There are regional organizations for the operation of computer technology, etc. But, first of all, similar subdivisions exist in by no means every oblast center, not to mention the city and rayon levels. Secondly, many of these institutions are

still primarily oriented toward the demands of the branches and the individual enterprises, rather than those of the territories. Thirdly, their effectiveness from the point of view of the acceleration of scientific-technical progress is obviously insufficient.

In a word, the city agencies of authority frequently have to operate under conditions of a hunger for systematized information.

This breach is being closed by the efforts of the social organizations, to the extent of their manpower, efforts, and initiative.

At the present time the city planning commissions cannot cope with accounting-analytical work -- their staffs and the proficiency level of their cadres do not permit this. The situation is aggravated even more by the low level of their informational interaction with the financial and statistical agencies. Incidentally, the latter have also not been providing a thorough analysis of the socioeconomic development of the city.

In major cities a way out of the situation is found by relying on the scientific-technical public, by involving a broad group of representatives of scientific and educational institutions, and competent individuals from other organizations in the development of the plans for economic and social development. In this process it is no simple matter to guarantee the precise coordination of the actions performed by the developers, although in this area a definite amount of experience has already been accumulated, for example, in Leningrad, Moscow, Kiev, Minsk, and Sverdlovsk. The overall guidance is entrusted to the coordination council that is approved by the local party and soviet agencies.

In the process of planning, the tasks are discussed in the enterprise and organization collectives, and at sessions of the city soviets of people's deputies. A determination is made of the shared participation of the enterprises in the construction of facilities intended for use by the entire city population, as well as the customer, contractor, etc. The developed draft of the plan is discussed at the party and trade-union levels and is approved at a session of the city soviet. Then the work begins in the labor collectives to fulfill the plan.

This (in the best situation) is what the plan for the mechanism for administering the development of the city looks like at the present time in general features, a mechanism that is based chiefly on ideological and administrative methods of exerting an influence. It has rather frequent malfunctions in the fulfillment of the decisions being made, and it turns out that, from the total number of plans for the enterprises, it is difficult to create a substantiated plan for the development of the city, that the total amount of capital investment will not guarantee complete development, etc. But the most important thing is that the city authorities have very strong economic levers for exerting an influence upon the enterprises which are subordinate to "their own" ministries.

Obviously, many problems will be removed in the process of implementing the decree of the CPSU Central Committee, the Presidium of the USSR Supreme



Soviet, and the USSR Council of Ministers, entitled "Ways for Further Increasing the Role and Intensifying the Responsibility Borne by the Soviets of People's Deputies For Accelerating Socioeconomic Development in the Light of the Decisions of the 27th CPSU Congress." That decree opens up opportunities for the formation of a new economic mechanism for the accelerated development of the city.

#### Intensification of Economic Methods of Administration

We are convinced that economic methods make it possible to ascertain very important territorial ties which, when the appropriate organizational conditions exist, are capable of revealing tremendous reserves for increasing production and accelerating scientific-technical progress. Economic methods will help to guarantee in the relations those conditions that encourage the reproduction of the technology and the labor resources, as well as the correct observance of the dependency between production and consumption. At the present time the city does not have norms for encouraging scientific-technical progress or for reproducing the labor resources.

The country has already had a certain amount of experience in the application of economic methods of administering the city on the basis of the creation of territorial interbranch associations (TMO). These associations exist in the Georgian SSR.

The basic tasks of the TMO are the concentration of efforts on the acceleration of the technical development of enterprises, while increasing the role of the local soviets; the coordination of the interbranch ties; and the location and use of the material, labor, and financial reserves of the enterprises.

At the Poti Association, all the enterprises and organizations of republic and local subordination that are part of it deduct and transfer to centralized funds 10 percent of the planned and 50 percent of the above-plan uncommitted balance of profit. These additional receipts are used for the needs of the remodeling and technical re-equipping of existing enterprises, the creation of new production entities for producing consumer goods and improving the city, and for improving the public's food supply. Enterprises of union subordination also participate in the cooperative efforts, in the construction of facilities for collective use.

This experiment opens up paths for creating a mechanism for accelerating the development of the city's economy. Going farther ahead means working steadily to expand the influence of the soviets both in encompassing the branches of the city's national economy and in using methods to exert an effect upon the acceleration of development.

At the overall city level, it is necessary to guarantee the comprehensive administration of the city as a whole. This is the development of the concept of city development, the guaranteeing of the proportions and optimization on the basis of the use of scientific and production achievements and various resources and the creation of the necessary conditions for reproducing the manpower.

The territorial-branch, interbranch, and production associations and complexes can unite the branches and enterprises that belong to various departments, primarily those which participate in the implementation of the common goal and produce products, blessings, and services of the same kind. These include, for example, the machine-building complex, power engineering, transport, communication, capital construction, science, scientific-technical information, higher and secondary special education, material-technical supply, nature management, etc.

At the present time many complexes at the city level do not have administrative agencies, although they could resolve important tasks effectively for them. Experience, in particular, which has not lost its attractiveness is the experience of organizing a construction complex in Orel, which represents on the scale of a city a single planning-design-construction conveyor belt.

In order to intensify the influence of the local soviets, it is necessary to expand substantially the administrative functions of the city's planning commission, financial department, labor department, capital-construction administration, etc. In their work they must not limit themselves simply to the framework of the economy that is subordinate to the local soviets.

A factor of special importance for accelerating scientific-technical progress in the city is the authorizing of the directive agencies to organize the production, on cooperative principles, of means of mechanization and automation to assist heavy manual and relatively unskilled labor, for joint purchase and operations, and also the rental of progressive equipment, instruments, and apparatus, and the creation of computer centers intended for collective use, and united experimental-laboratory scientific and design services for the needs of several enterprises and organizations.

The resolution of these tasks would be promoted, in my opinion, by the development of a network of local machine-building enterprises. The products list for their output (means of mechanizing manual labor; various kinds of technical attachments for organizing the municipal management and construction; small castings; cutting tools; etc.) can be determined by proceeding from the technical and economic needs of the cities. These enterprises could make wide use of centralized and local exhibitions and designer developments. Experience such as this already exists.

Thus, the production of means for mechanizing vegetable-harvesting operations was organized on cooperative principles in Alma-Ata. That made it possible to achieve a considerable reduction in the number of workers annually sent out by the city enterprises to help the rural population.

It would be desirable to build such enterprises with the use of flexible production entities that can be quickly switched to producing the new output, and to build them at the expense of the interested ministries. The organizations that can act as the lead organizations are the ones that have been given the responsibility of executing those tasks on the particular territory.

It is necessary to develop a territorial system of state agencies for administering scientific-technical progress, in which the local soviets would be active participants. They must have in their table of organization departments that engage in questions of technical and economic development. The wage fund and the number of workers in those departments should be made dependent upon the volume of work to be fulfilled, the profit to be obtained from improving the efficiency of the technological and economic ties on the territory, and the use of production capacities, equipment, secondary resources, and non-disposable items.

At the present time the local soviets have been granted the right, with the consent of the Councils of Ministers of the union republics, to create interbranch and intereconomic territorial-production associations and to include as part of them enterprises and organizations of republic and local subordination whose output and services are basically used on the particular territory.

It would seem to be promising to intensify in this regard the economic role of the territorial TsNTI by reinforcing their scientific, material-technical, and information base. It would be desirable to transform them into territorial scientific-technical associations working on a cost-accounting [khozraschet] basis. The income received by those associations could form as a result of the providing of paid information to the consumers, as well as the rendering of skilled technical and organizational services to the enterprises. That income can, apart from everything else, serve as a source of financing the temporary collectives of scientists and engineers for developing major problems in the development of cities and oblasts. A large amount of assistance in the formation of these collectives can be rendered by organizations of NTO [scientific-technical societies] and VOIR [All-Union Society of Inventors and Efficiency Experts].

Under the leadership of the local soviets, the information agencies existing in the cities, oblasts, scientific-technical, designing and construction agencies, and computer centers should be profoundly integrated. This will be facilitated by modern computer technology, and this will promote broad accessibility for the users, and primarily the city administrators, to data that is oriented toward the fulfillment of administrative functions.

This will make it possible to increase the opportunities for analysis and to improve the quality of making planning decisions. The formation of automated data banks, for example, concerning the scientific and production potential existing in the city and the areas in which it can be used, opens up large opportunities for increasing the effectiveness of production.

In this instance the creation of corresponding citywide services for the providing of various kinds of data to the users and for the rendering of administrative services to enterprises and organizations has demonstrated its economic value. Frequently it is specifically because of the lack of such service organizations that computer technology is used poorly.

## Transition to Municipal Cost Accounting

A very important element in forming the economic mechanism is the coordination of the development of the city's economic and social spheres. Social development must be made dependent upon the results of the enterprises' economic activity, namely, it is necessary to form the city budget from deductions from the enterprises' profit.

The decree that has been enacted calls for intensifying the incentives of the soviets to increase the effectiveness of the work performed by all the associations, enterprises, and organizations situated on their territory. In 1988-1989 it is planned to introduce a procedure by which they transfer part of their profit to the local budgets, as well as deductions from the turnover tax.

It has been deemed desirable to carry out economic experiments in 1987-1988 dealing with the guaranteeing of the proportional development of the production and nonproduction spheres and the efficient use of labor resources.

In this regard a factor that is becoming very important is the economic substantiation of the norms pertaining to the reproduction of the fixed assets of the city management in direct dependence upon the size of the wages and the number of persons working at enterprises and organizations in the city, which reflect the two forms of distribution of life's blessings (based on labor, and public consumption funds). Proposals on this score have already been made. It is important also to determine the procedure for forming the funds for these purposes, as well as the structure of economic relations.

It is well known that the bulk of the net income created by enterprises and organizations in the city is collected in various forms (turnover tax, payment for assets, rental payments, etc.) for payment to the state budget, and then is returned to the city by way of centralized redistribution. The absence at such time of relations for compensating the expenditures for the reproduction of labor resources directly on the territory of the city reduces the responsibility of the enterprises and institutions for the complete development of the urban management. Therefore the ministries and departments in some instances manage to avoid the allocation of capital investments for those purposes, and others have to make considerable investments. But the local soviets cannot yet exert a well-substantiated and effective influence upon this process.

Capital investments for the development of the urban management are formed along two basic channels -- by way of the ministries (departments) and the local soviets. This is necessitated by the centralized regulation of the development of the leading branches and the guaranteeing of the equalization of the distribution of public consumption funds, and the complete development of the cities. But in order to establish economic relations within the cities, this procedure creates definite difficulties, since there is a dissimilar correlation between the volumes of the produced net product and the consumed product. Therefore the relations with regard to the reproduction of labor resources in the city can be carried out in a centralized procedure. They can be implemented either at the republic level, when all the funds for



those purposes are accumulated in the republic and in conformity with substantiated norms are transferred to the city, or at the city level, when the funds in the same amounts are distributed along the ministry lines and are accumulated on a cooperative basis locally by a single customer -- the city soviet of people's deputies.

In establishing with it the well-substantiated economic relations of trade collectives, it is important to have the participation of trade-union agencies -- branch and territorial. This is all the more necessary when there is an expansion of the economic independence of the labor collectives, and the transition of the enterprises to self-financing and self-supporting production [samookupayemost].

In the future, it makes sense for the deductions of funds for payment into the citywide fund for reproduction of city management facilities to be expanded, if possible, to fully reconstitute expenditures, that is, as far as the transition to self-financing and self-supporting production. Money that can also be sources of these funds is the income received by the implementation of the most varied measures to increase the territorial efficiency which are carried out on the initiative of the city agencies of authority.

To no small degree the achievement of good citywide results would be promoted by the establish of a system of bonuses for the workers in the apparatus of the local soviets for fulfillment and overfulfillment of plans by the enterprises situated on the territory subordinate to them.

The next series of problems linked with the establishment of economic interrelations in the city involve the improvement of the system of levers and sanctions that guarantee the compensation by the enterprises to the city of the expenditures for the reproduction of the labor resources. It is desirable to establish local supervision over the payments of capital investments from the enterprises and institutions. For example, branches of USSR Gosbank and Stroybank could monitor the number of workers at enterprises and organizations and the payments of capital investments.

There are other opportunities for exerting an effective influence (granting of credit; allocation of plots of land, local building materials, etc.). The activation of all the levers and sanctions will promote the proportional development of the production and nonproduction spheres, and the more economical use of the citywide resources.

Editor's note: In publishing M. V. Glazyrin's article for the purpose of eliciting discussion, the editorial office calls upon workers in the local administrative agencies, soviets, party and trade-union committees, enterprises, municipal services, etc. -- that is, everyone who is interested in problems of the combination of territorial and branch administration -- to express their recommendations with regard to the questions that have been raised here.

## Territorial Pre-Planning Documentation

Moscow EKONOMICHESKAYA GAZETA in Russian No 7, Feb 87 p 15

[Article by N. Minayev, senior scientific associate of the Institute of Socioeconomic Problems, USSR Academy of Sciences, candidate of economic sciences, under rubric "Restructuring the Economic Mechanism: Territory and Branch": "From Forecasts to Plans"; first paragraph is source introduction]

[Text]--Leningrad--The article "Territorial Cross-Section of Acceleration: Ways to Create the Economic Mechanism for the Development of a City" (EKONOMICHESKAYA GAZETA, No 52, 1986) considered vitally important questions of improving administration, although scientists and persons engaged in economic practice have been attempting for a long time to find answers to them.

For many years the attempt has been made to coordinate regional and departmental plans and to find the appropriate approaches to do this. And each time their developers have been opposed by one and the same difficulties. The chief difficulty has been the lack of the necessary information.

In order to prepare a well-substantiated territorial plan it is necessary to know how much output the enterprises will produce over the long run, what funds they will be able to channel into the development of capacities, etc. Information such as this determines not only the reliability but also the very possibility of making computations of practically all the plan indicators and primarily, of course, the volumes of production, the increase in labor productivity, the number of persons employed, and the economic effect.

This information is necessary not only for developing five-year plans, but also for developing plans for an extended period, and for preparing programs for developing the production and nonproduction infrastructures of the region and the general plans for the developing of major cities.

In the final analysis, in order to develop pre-planning documents (forecasts, program) for an extended period, the regional administrative agencies must have information concerning the prospects for the development of the enterprises and organizations situated on its territory. As long as that kind of information is lacking, the plans for the comprehensive economic and social development of the region will be simply the mechanical compilation of the branch plans.

When one comes up against this situation, one falls somewhat automatically under the influence of the view that the branches lack any ideas of the prospects for their development, although this is far from being so. I would like to cite the experience of a lead branch institute -- the VNII [All-Union Scientific-Research Institute] of Earth-Digging Machine Building (now a scientific-production association), of USSR Minstroydormash [Ministry of Construction, Road, and Municipal Machine Building], where, for many years, I was engaged in preparing pre-planning documents.

That work began with the preparation of a forecast for the development of science and technology over a 20-year period. A forecast was made of the improvement of all the basic parameters of the machines, both the traditional ones and the fundamentally new ones.

On the basis of that forecast we prepared a forecast of the national economy's need for the articles produced by the branch.

Those forecasts were used in order to plan the development of the branch, and to prepare branch plans for the development and placement of production. Sometimes individual enterprises in the branch asked us for that data, and we furnished it to them.

When developing the plans, we refined the volume of capital investments required for our branch, and in conformity with that we determined in a more realistic manner the prospects for developing branch production as a whole and in the cross-section of the economic regions and union republics. The plan is specifically addressed, that is, it indicates the republic, oblast, and city in which it is proposed to build new enterprises or develop the existing ones. In addition, it contains data concerning the balancing of the production and consumption of the output, and the basic indicators of the activity of the enterprises that are to be newly constructed, technically re-equipped, and remodeled. When necessary, that information can be expanded and made more detailed.

Thus, the pre-planning documents contain the information that is necessary for developing the territorial programs and plans. Why, then, are these opportunities not being used in this instance?

It would seem that the reason lies in the limited nature of the application of pre-planning documents. They are prepared basically for the needs of the apparatuses at the ministries that are elaborating the prospects for developing the branch as a whole, and are not subdivided down to the level of individual enterprises or regions. In addition, although the forecasts and plans for development and placement are developed by all the ministries, the procedure of executing the operations which was previously mentioned is not used everywhere in this process. And if one judges from the state of organization of the pre-planning operations in the branch administrations of the oblast and city ispolkoms of the soviets of people's deputies, the situation is especially poorly organized in the republic and union-republic ministries. Apparently, these shortcomings can be explained by the large number of these administrations.

Another major problem in improving territorial planning is the coordination of the goals and indicators with the resources. An example that is typical in this regard is the example of developing the target comprehensive program for the past five-year plan by the Main Administration of the Bread-Baking Industry, of the Leningrad city and oblast ispolkoms of the soviets of people's deputies.

The substantial program, which was replete with large-scale and effective measures, proved to be unsupported by the appropriate resources. The fact that there is a gap between the required resources and the actual ones is nothing unusual -- our needs always exceed the opportunities. What is strange is something else: how such an overstated total had found its way into the program, and why the ministry had not been able to communicate to the main administration more or less realistic figures during the period when it was being prepared.

Shortcomings such as this are linked basically with the imperfection of the procedure for coordinating goals and resources. Experience shows us that the forecast must be adjusted after approximately every two years. This is influenced by the changes that occur in the development of technology and in the volumes of operations performed by the consumer. And we acted in exactly that way, but even so the forecasts were not brought, as they should have been, to the level of reliability acceptable for preparing the plan. That shortcoming, of course, can be explained by the imperfection of forecasting in the national economy as a whole, since that adjustment should also have been linked with the changes in the forecasts for the development of the other branches. If that shortcoming is not eliminated, the regional programs and plans will include "raw" indicators and measures.

However, despite all these stipulations, we can still conclude that the necessary prerequisites exist for assuring that the territorial system of preparing the plans is not a local one, but is a more organic part of the system of developing the national economy plan.

For that purpose, in particular, it is necessary for the information that is concentrated in the branch institutes of technical-economic research and information to be sent out to the various enterprises, and for projects involving new construction, to the planning commissions in the regions. If the enterprises possess sufficiently reliable, previously coordinated and regularly updated information concerning the prospects for their development, that will considerably facilitate the procedure for developing the territorial plan and will improve its quality. Taking into consideration the large number of enterprises, the information should be submitted on various carriers -- magnetic disks, tapes, packets of punched cards -- should be summarized with the aid of electronic computers.

It is natural that a plan that has been prepared on the basis of this kind of information will not yet be completely territorial. In order to make it such, the indicators must be adjusted with a consideration of the action of the regional factors for increasing the effectiveness of production. These factors can be determined only on the basis of an analysis of the forecasts for developing the enterprises situated in the region. Remodeling, the technical re-equipping of production, and the construction of new enterprises lead inevitably to the need for a corresponding development of the production and social infrastructures. All this work must be done in the form of forecasting, and then the preparation of target comprehensive programs, the indicators and measures of which are to be included in the plans.



A notion of the possible ways to resolve the problems of combining the territorial and branch aspects of planning in a comprehensive manner will be provided by a brief design of the procedures which must be carried out for this purposes:

- the elaboration, on the basis of branch forecasts, of territorial forecasts: scientific-technical, economic, demographic, labor resources, and ecological;

- the elaboration, on the basis of these documents, of a draft version of the economic and social norms and the regional limitations necessary for elaborating the five-year plan for the region;

- the submittal of the forecasts and the draft of the norms to the Gosplans of the union republics for consideration;

- consideration, generalization, and approval of the norms at USSR Gosplan and sending them to the ministries and departments;

- taking into account by the latter of that information when elaborating forecasts for the development of the branches, designs for the development and placement of production, and other pre-planning documents;

- elaboration of a second version of the comprehensive forecast of the development of the region on the basis of the use of the appropriate branch materials that take into consideration the territorial factors in increasing the effectiveness of production and the limitations that have been coordinated with USSR Gosplan;

- elaboration, on the basis of that forecast, of territorial target comprehensive programs;

- elaboration of a comprehensive plan for the economic and social development of the region.

This design of pre-planning operations provides the opportunity to prepare territorial plans and the plans for enterprises situated in the region with a consideration of the resources existing there, the limitations, and the attainment of indicators that are specific for the particular territory.

As for the overall number of documents to be developed, for purposes of comparison one may say that the preparation of the branch plan requires the elaboration of a branch development forecast that consists of 12-14 separate types of forecasts -- scientific-technical forecast, forecast of the need for the branch output and for materials, etc. The greatest difficulties here are in elaborating the initial versions, and subsequently they will only be refined. It is possible at such time to make wide use of electronic computers and economic-mathematical methods.

The well-organized elaboration of the pre-planning documents will guarantee the high level of substantiation of all the plans, and the additional expenditures of labor that are necessary for this purpose are more than compensated for by the exclusion of the need to prepare numerous statements, reports, and "off-the-ceiling" recommendations.

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## AGRO-ECONOMICS, POLICY, ORGANIZATION

UDC 631.173

### IMPROVE APK MATERIAL-TECHNICAL SUPPLY MANAGEMENT

Moscow EKONOMIKA SELSKOGO KHOZYAYSTVA in Russian No 1, Jan 87 pp 19-27

[Article by A. Lyapchenkov, deputy chairman of USSR Gosagroprom: "Raising the Effectiveness of Logistical Supply for Agro-Industrial Production"]

[Text] In the Political Report by the CPSU Central Committee to the party's 27th congress, emphasis was placed upon the fact that the system of logistical supply is in need of serious improvements and that "it must be converted into a flexible economic mechanism, one which will aid the national economy in operating in a rhythmic and stable manner." This year, USSR Gosagroprom [State Agro-Industrial Committee] will carry out planned work in connection with improving the unified system of logistical supply, created in conformity with the decree of the CPSU Central Committee and the USSR Council of Ministers entitled "Further Improvements in the Administration of the Agro-industrial Complex," based upon supply organizations, abolished ministries and departments. Its workers are subordinating their activities completely to solving the main task -- that of accelerating implementation of the USSR Food Program.

At the present time, the trade distribution network for logistical supply for the APK [Agro-Industrial Complex] numbers more than 3,400 supply enterprises and organizations, located in almost every administrative region. Almost all of them have mechanized storehouse complexes. Covered storehouse facilities with an overall area of 8.3 million square meters are equipped with gantry and truck mounted cranes and also truck-mounted and battery operated loaders. Enterprises within the logistical supply system have mastered the production of equipment and devices for the packing of goods, shelf crane-stackers (trans-manipulators), light mechanization equipment and other types of equipment. In all, more than 80 types of storehouse equipment are under production at an overall cost of 22 million rubles annually. A portion of the equipment (truck-mounted and bridge cranes, truck-mounted and electric loaders and a number of other machines) is in series production and is being delivered to the supply bases and plants of various ministries. This year the level of mechanized loading and unloading operations at storehouses and bases will reach 82 percent. The value of the fixed capital of a supply nature will amount to almost 2 billion rubles.

A considerable production and scientific-technical potential is making it possible to change the existing organization of logistical supply. In addition to the traditional additional work and services (laying out and cutting of metal, rope and glass, sawing of lumber, packaging of goods and delivery of cement and other materials in special packaging) associated with this system, the supply service is carrying out a broad complex of work and services. This includes the complete delivery of machines for the use of intensive technologies in the cultivation of agricultural crops, centralized deliveries of logistical resources using its own transport vehicles, the gathering up of worn out machine parts for subsequent restoration, supplying of spare parts for equipment which broke down during the warranty period and a guaranteed supply of such parts during the main operational period. The supply service participates in controlling the quality of new equipment and spare parts scheduled for delivery, in the formation of the exchange fund and the fund for parts with an adequate service life remaining and also in other operations.

One of the chief functions of the service for supplying the farms with equipment is that of developing an effective structure for the machine-tractor pool. In the process, special attention is given to deliveries of powerful tractors, together with sets of the required agricultural machines. Increases are taking place in the volumes of complete deliveries of equipment for use with intensive production technologies.

The proportion of centralized shipments of goods, under free-on-farm conditions, is 83 percent of the overall shipment volume. A solution has been found for the large-scale socio-economic task concerned with levelling off the expenditures of kolkhozes and sovkhoses for the shipping of logistical resources acquired. The centralized shipping of goods to farms has made it possible for them to release approximately 60,000 workers and 80,000 motor vehicles for the carrying out of agricultural work.

The formation of the logistical supply organs for USSR Gosagroprom has now been completed. Centralized planning and administration for the unified logistical supply system for APK branches are being carried out by the Main Administration for Logistical Supply (Agrosnab), headed by the deputy chairman of USSR Gosagroprom. Agrosnab, together with subunits of the gosagroproms of union republics, is responsible for the timely and complete supplying of logistical resources to enterprises, institutes and organizations of the APK and also (in accordance with the established nomenclature) to enterprises and organizations of the USSR national economy on the whole.

The Agrosnab staff at both the union and republic levels consists of several groups of subunits. Support for agro-industrial production in the form of certain types of products is carried out by administrations for the supplying of material resources (fuel, chemical and technical-rubber products, motor vehicles, tractors, agricultural equipment, general plant and technological equipment, spare parts, metal, instruments, electrical engineering products, special clothing, construction and lumber materials and others). This group of subunits also includes an administration for supplying packaging materials, products and raw materials.



A second group of Agrosnab subunits carries out general functional tasks aimed at improving the organization, economics and technology of supply, achieving efficient utilization of material resources and attracting secondary materials into economic circulation. The system of supply also includes specialized supply associations for carrying out an entire complex of operations associated with the supplying of specific goods.

Agroshab [Main Administration for Logistical Supply] works in close contact with structural subunits of USSR Gosagroprom, the Gosagroproms of union republics, USSR Gosplan, USSR Gosstnab and also with ministries and departments included in the USSR Gosagroprom system. Agrosnab supplied all consumers included in the APK with logistical resources, in accordance with the funds (limits) allocated to them. The solutions for the tasks assigned to it must be accompanied by more efficient organization of the turnover in means of production, economically sound utilization of material resources and by a reduction in expenditures for the transporting and consumption of materials.

The oblast and rayon logistical supply services are tasked primarily with organizing a planned and continuous supply of logistical resources for APK enterprises and organizations; providing them with a broad range of production services; furnishing a complete supply of the materials required for the construction or modernization of production and cultural-domestic installations; introducing progressive forms and methods for providing services for consumers, for the complete mechanization of production processes and for automatic control systems for logistical supply for the agro-industrial complex of a region and others.

The supply bases subordinate to the gosagroproms of union and autonomous republics, the agroproms of oblasts and krais and rayon agro-industrial associations ensure that the APK enterprises and organizations are supplied with spare parts, raw materials, metal, construction materials and other products of a production-technical nature, in accordance with the funds allocated.

The supply organs of USSR Gosagroprom have been assigned the task of developing, within a brief interval of time, a scientifically sound logistical supply plan for the APK as a single entity. The preparation of such a plan is complicated by a product nomenclature numbering in the thousands; by its varying production purpose, by the numerous and different types of planning documents and by a multiple-stage system for coordinating and approving the computed requirements (orders) of industry and distributing the funds allocated for material resources. All of this raises a need for developing scientifically sound norms for determining the material resource requirements for agro-industrial production. Here a priority role must be played by the acquisition of machine systems which make it possible to achieve the complete mechanization of production processes and, on this basis, to raise labor productivity sharply and lower production costs at kolkhozes and sovkhozes.

Specialists attached to a RAPO [rayon agro-industrial association] supply service must provide the farms with skilled assistance in preparing sound requests for equipment. Moreover, these requests must be thoroughly analyzed taking into account the existing norms for the completeness of tractors and

the agricultural machines coupled with them and their systems. In addition, the financial potential of the farms must be taken into account and the summary requests by a rayon must be presented in a timely manner to the higher organs of APK administration.

The agroproms of oblasts and krays must analyze more thoroughly the computations and completeness of the requests by RAPO's and other organizations which they are supplying with logistical resources and they must take into account the financial status of the consumers. Similar work is carried out by the gosagroproms of union and autonomous republics and USSR Gosagroprom, who present the country's planning organs with estimates and summary requests.

In streamlining the logistical supply system, improvements must be carried out in the area of planning equipment requirements and forming an optimum structure for farm machine systems based upon the use of economic-mathematical methods and computer equipment and a gradual conversion must be carried out over to the use of computers for forming equipment requests.

The structure of the information-computer service, which ensures the processing of logistical supply information, includes 104 production computer centers equipped with 172 computers and also 2,200 information-computer points, which have at their disposal more than 10,000 electronic invoice and bookkeeping machines. The acceptance and processing of farm requests are carried out by more than 3,000 dispatcher points. An automatic control system for logistical supply provides efficient accounting on the availability and movement of goods, for the entire nomenclature of products, at more than 8,500 supply and production storehouses, maintenance of accounts with suppliers and consumers, accounting and control over the carrying out of delivery plans, planning of requirements and distribution of funds for almost the entire nomenclature of logistical resources.

An improvement in accuracy in computing the requirements for spare parts, timely planning, the possibility of making the supplies of spare parts more mobile in nature and an increase in the use of restored parts have made it possible for the most part to guarantee deliveries to the farms, despite the fact that industry is still not satisfying the demand for spare parts.

In the future, a conversion must be carried out over to the complete automation of the computations for requirements, for the entire nomenclature of products, based upon the use of micro and mini-computers at the rayon and oblast levels, and an inter-machine exchange of information on requirements at the oblast, republic and union levels. The functions concerned with developing the balances and plans for the distribution of products consumed mainly by APK enterprises and organizations must be gradually turned over to the supply organs of USSR Gosagroprom. This has to do mainly with agricultural machines and the spare parts for them, the balances and plans for which are now being approved by USSR Gosplan.

Special attention must be given to the problems associated with planning the supply of spare parts for agricultural machines and equipment. In addition to the normative method, use is also being made at the present time of the

economic-statistical method of forecasting for determining the requirements for spare parts and for forming plan-orders. It is based upon a statistical analysis of information describing the level of consumption of spare parts over a number of years. Supply planning, with use being made of computers, is being carried out at all administrative levels. The functions of farms, enterprises and APK organizations in this process amount to the timely turning over to the organs of supply information on the availability of machines and equipment, repair plans and the quantities of spare parts remaining. The requirements for products of a production-technical nature (and the formation of requests for it) are determined mainly using the normative method, based upon the planned work volumes and the norms for consumption of materials for production-operational and repair needs and also upon the order-requests of consumers.

In conformity with the Basic Directions for the Economic and Social Development of the USSR During the 1986-1990 Period and for the Period Up To the Year 2000, more efficient use must be made of petroleum products in agriculture. Maximum savings in the use of these products will be achieved mainly by raising the quality level for establishing norms for the consumption of all types of fuel and for scientifically sound planning for the fuel requirements.

Further improvements are needed in the relationships with enterprises of agricultural machine building. The latter are not responding very well to changes in the demand for goods, preferring instead to produce products which were mastered long ago. At the same time, acute shortages of some goods and surplus supplies of others are being created.

Important functions in supply activities -- distribution of allocated funds and the formation of supply plans and product work requests. The supply system of USSR Gosagroprom has a far-flung network of bases and storehouses at the oblast and rayon levels and this has raised a need for distributing funds and product orders and for delivering material resources to bases and storehouses which resemble APK enterprises and organizations to the maximum possible degree. Thus a single mechanism must be developed for distributing the funds and for delivering them to the consumer, the automation of these functions in terms of the entire nomenclature of products must be completed and close information interaction must be achieved with the ASU's [automatic control systems] of USSR Gosplan, USSR Gossnab and ministries and departments, the producers of logistical resources.

The task of ensuring a regular and continuous supply of logistical resources for APK enterprises and organizations is largely dependent upon an efficiently organized system of operational control over the deliveries and supplies of material resources. In the process and with national interests being taken into account, importance is attached to ensuring efficient work by the goods shipment network of USSR Gosplan, USSR Gosagroprom and USSR Goskomnefteprodukt [State Committee for the Supply of Petroleum Products]. Taking into account the peculiarities found in each region, the organs of supply must distribute the supplies and organize deliveries in a manner such that the most efficient use is made of the bases and storehouses attached to these systems, with no duplication of functions or unwarranted shipments of goods.

When operating under the new conditions, an increase takes place in the role played by economic contracts, which define the rights, responsibilities and obligations of the parties concerned with the deliveries of all types of products. However, the planning documents for deliveries and the economic contracts concluded on the basis of such documents can ensure effective administration for logistical supply only when systematic and efficient control is exercised over their execution. The implementation of operational control and the regulation of deliveries must be reinforced by appropriate economic indicators for evaluating the work of enterprise-suppliers and supply organizations and a direct influence must also be exerted over the formation in them of material incentive funds.

The quality of supply operations for APK enterprises and organizations is determined to a considerable degree by the effectiveness of the existing system for exercising operational control over supplies. The status of the supplies of material resources at supply bases and for agro-industrial production on the whole is unsatisfactory at the present time. The chief reason for this -- insufficient organizational work in connection with the introduction of scientific methods for controlling supplies and weak work in the area of creating these supplies in the republics and oblasts. In order to correct the situation, it will be necessary to ensure functioning of an operational system for nomenclature accounting for the movement of goods and to employ reliable strategies for regulating and controlling supplies at all levels, with regional conditions being taken into account.

The methods for controlling the sale of supplies of various types of goods are by no means the same. The greatest difficulties arise from controlling the marketing of accumulated spare parts, owing to their vast nomenclature and the nature of the demand. This process is closely associated with the establishment of norms. In the interest of controlling the status of the supplies and observing their norms, regular checks should be carried out on the work of the supply organizations. This will make it possible to aid them in expanding the movement into circulation of surplus and unmarketable goods. A sharp expansion must take place in the near future in the scales for the introduction of draft plans developed by the All-Union Scientific-Research Institute of the Metrological Service of USSR Gosagroprom, for a complete determination of the norms for a reserve of spare parts in the oblasts and rayons. The extensive introduction of automatic control over supply operations, using these plans, will make it possible to assign greater mobility to the supplies, exercise automatic control over the status of supplies at supply bases and with consumers and reduce the overall supplies.

Agrosnab [agricultural supply] must ensure further improvements in the level of satisfaction of consumer demand for spare parts, with minimal expenditures. Zonal bases for spare parts which are subordinate to Agrosnab provide the logistical base for a centralized system for exercising operational control over supply. Each base will appear as a large-scale modern supply complex, with a computer center that is reliably associated with oblast and republic computer centers and also with the main computer center of USSR Gosagroprom.



The placing in operation of zonal bases will promote the organization of an effective system for regulating supplies throughout the country as a whole. It will become possible to store a 5-7 percent reserve of spare parts not at supplier-plants but rather at zonal bases and this will make it possible to maneuver reserves more efficiently. The possibility now exists of increasing the frequency of deliveries to oblast bases of numerous parts for which there is only occasional demand, as a result of an increase in their deliveries to zonal bases. The availability to consumers of such parts will be raised by 40-50 percent. An increase will take place in the deliveries of spare parts for imported equipment and this will make it possible to improve the supply of these goods.

The creation of a reserve of spare parts, based upon scientifically sound norms for storage, is opening up a broad expanse for concentrating them at supply bases. This will make it possible to achieve further development of guaranteed supply operations in accordance with the established limit. Changes are taking place in the existing limitations for ordering spare parts produced by industry and for consumers obtaining them through oblast and rayon supply bases. Limitations more acceptable to the consumers will be introduced into operations -- by groups of parts and their total value, in addition to deficit spare parts and contractual relationships will be established between a consumer-farm and a supply base with bi-lateral responsibility. The plans also call for a contract for the delivery of spare parts to be concluded between an oblast and rayon supply bases.

The communist party is devoting a great amount of attention to improving the economic mechanism. Among the tasks for reorganizing this mechanism mentioned in the Political Report by the CPSU Central Committee to the 27th Party Congress, the following is singled out: "to convert over to economic managerial methods at all levels of the national economy. This requires the reorganization of logistical supply, improvements in the system of price formation, financing and the issuing of credits and the development of anti-expenditure incentives."

An experiment is being carried out at the present time in connection with working out the principal conditions for the new supply system for spare parts. The annual economic savings from its introduction will amount to from 100,000 to 140,000 rubles per rayon. For 1987, the plans call for an expansion in the scale of the new forms for supply and, in 1988, for consumers in all areas to convert over to the new form for supplying spare parts.

An important reserve for raising the effectiveness of logistical supply is the efficient utilization of used material resources, which must be promoted by the collection and restoration of worn out parts and the uncovering of surplus machines, spare parts and materials among consumers and including them in economic circulation. In the interest of raising the effectiveness of supply operations, surplus goods available at bases and storehouses must be uncovered in a timely manner and sold. All of this will make it possible to reduce production expenses among consumers and commodity stocks at the supply bases.

The use of secondary raw materials can furnish a great savings in material resources and a considerable increase in the production of products needed for

the national economy. There are large supplies of such materials on farms and at organizations and enterprises. The failure to use secondary resources can result in considerable losses. For example, for 1 ton of unused worn out tires this loss amounts to 290 rubles, for 1 ton of waste paper -- 285 rubles and for 1 ton of used petroleum products -- 210 rubles. At the same time, for example, the production of paper or cardboard from waste paper makes it possible not only to economize in the use of materials but also to reduce atmospheric contamination by 86 percent and water contamination by 25-44 percent. The most feasible method for drawing secondary raw materials into production is that of ensuring its collection and subsequent delivery to procurement organizations and processing enterprises. The supply organs of USSR Gosagroprom must launch an extensive campaign in connection with the collection of individual types of secondary raw materials from both consumers and from within the supply system.

Improvements in the quality and effectiveness of supply are also largely dependent upon further development of both the traditional and new production services. A considerable increase will take place during the current five-year plan in the work volumes associated with complete deliveries of machines for industrial technologies and technological lines and also complicated equipment for farms and complexes under construction or undergoing modernization. Assistance should be provided to the installation organizations in completing and turning over their underway projects in a timely manner.

The volume of production services should be increased and their quality raised and solutions must be found for many problems of an organizational nature. The logistical base for production departments and sections must be strengthened, they must be supplied with highly productive equipment and special stands and machines, the renting of instruments, units and other items of technical equipment must be developed in an active manner, a reserve fund of such equipment should be created, the publishing of information on the availability of instruments for consumers should be organized on an extensive scale and provision should be made for the repair and issuing of such equipment to enterprises and organizations.

An important path to be followed for improving logistical supply is that of introducing new and progressive forms for supplying consumers with material resources. Wholesale trade, which USSR Gosagroprom views as being one of the principal trends for scientific-technical progress in the sphere of turnover in the means of production of the APK, will undergo further development. The plans call for an economic experiment to be launched in 1987, in the gosagroproms of the Lithuanian SSR and the Moldavian SSR and in the agroproms of Stavropol Kray and Ryazan Oblast, in connection with carrying out supply operations with kolkhozes, sovkhoses and other APK enterprises in the form of wholesale trade. During the course of the experiment, it will be necessary to define more precisely the nomenclature of products and to adjust the economic mechanism to this form of supply. During the first stage (in 1987-1988), scientific-research, planning and design organizations and experimental enterprises of USSR Gosagroprom will be converted over to supply operations based upon wholesale trade. The plans also call for the approval first of all of a system for supplying spare parts based upon wholesale trade principles,

with consideration being given to the fact that this group of products is very large in terms of nomenclature and that the products are being supplied by USSR Gosagroprom to enterprises and organizations not only of the APK but also of all branches of the national economy. Thereafter, taking into account the results of the economic experiment and a summary of the experience of those regions participating in it, wholesale trade will be introduced into the USSR Gosagroprom system on an extensive scale.

Increased attention must be given to developing the commission trade and drawing into economic circulation surplus commodity stocks which are not being used by the farms. The task consists of creating, within the immediate future, an extensive network of special stores and storehouses within the USSR Gosagroprom system, the workers of which must uncover and sell unused material resources on a commission basis. The experience of individual republics has underscored the high national economic effectiveness of the commission trade. This form of trade makes it possible to draw into circulation a considerable portion of the material resources.

A more bold approach must be employed in introducing into the economic practice of the supply services new methods for studying and forming the requirements of agricultural and other APK enterprises for progressive types of machines, equipment, mechanisms and implements. One such method is that of organizing, jointly with machine building enterprises, wholesale fairs, where new and highly productive machines and implements recommended for production can be displayed and where consumer demand for such products can be studied.

An indispensable condition for further improving logistical supply for the APK is that of developing economic managerial methods and introducing an effective economic mechanism which will ensure efficient work and high operational results by the administrative and production-supply services. These methods must promote increased material interest in improving the work of each worker and that of an entire collective.

Among the principal financial-economic indicators for planning and evaluating the work of supply organizations, the following can be singled out: the volume of goods and services sold in conformity with agreed-upon contracts; the level of overhead expenses and the total amount of marketable and production supplies in the zone being serviced. In the process, the income and material incentive funds of the supply organizations should be formed in a manner such that they are directly dependent upon the degree of satisfaction of consumer demand and the fulfillment of evaluative indicators. On the whole, the cost accounting incentives must be directed towards improving the work of the supply organizations and lowering the level of marketing costs. Moreover, over-fulfillment of the profit plans and an increase in the incentive funds on farms must be conditioned by growth in these funds in the supply subunits and organizations.

An important condition for further raising the effectiveness of logistical supply for the APK is the all-round mechanization and automation of loading-unloading and storehouse operations. The introduction of such operations on an extensive scale will make it possible to raise the intensity of use of storehouse equipment and production areas, it will encourage more thrifty use

of all material, labor and monetary resources and it will raise the productivity of social labor and lower operating costs. However, this raises a need for carrying out the technical re-equipping and modernization of many storehouses and the construction of new installations of a storehouse nature, in conformity with equipment development and changes in production.

Experience has shown that technological mechanized processes for the processing of freight, with individualized automation, are profitable only at storehouses with capacities up to 5,000 tons and at supply bases of various levels. At existing closed storehouses and at new ones under construction having a height of 6 meters, use should ideally be made of shelf stacker-cranes with a load lifting capability of 0.25 tons rather than inter-shelf hoists. Extensive use should also be made of mobile shelves. This will make it possible to improve the use of storehouse facilities by 15-20 percent, to raise labor productivity in them by 35 percent and to lower the costs for processing freight by a factor of 1.2.

The use of automatic equipment that facilitates control over lifting and transport machines and mechanisms and also the automation of the inter-operational transporting of standard storehouse freight units can have a substantial positive effect on the efficiency of use of the fixed capital of storehouse complexes and on raising productivity and improving working conditions in them. This equipment includes units for address control over complete stacking-cranes, units which should be employed extensively during the 12th Five-Year Plan. Their use will make it possible to raise the labor productivity of unit-completion operators by 5-7 percent and it will increase the service life of the electric drive for stacking-cranes and the savings in electric power by 3-4 percent. The use of units for the automatic positioning of load-lifting organs for electrically operated stackers and automatic and electric loaders of various modifications will ensure a maximum increase in the height of the storehousing operations and this will improve substantially the use of closed and open storehouses: the payload per square meter of storehouse space is increased by 16 percent.

Extensive use must be made of automatic accumulators for storehouse freight units, which serve as acceptance units for stacking-cranes of varying load lifting capabilities. This will make it possible to eliminate the manual labor being employed at the present time for the loading of stacking-cranes.

The need for accelerating scientific-technical progress and improving the economic mechanism and the entire system of planning and administering logistical supply requires solutions for a number of scientific problems concerned with the functioning of the branches of logistical supply. Scientific-technical progress in the sphere of APK enterprises must be accelerated considerably based upon strengthening the link between science and production and utilizing the latest scientific achievements. Importance is also attached to ensuring the creation and rapid introduction into operations of an effective economic mechanism for the functioning of the APK supply system and implementing a further expansion in and an increase in the effectiveness of automatic control systems, while taking into account the changing system for planning and administering APK logistical supply as a single entity. The plans also call for a sharp expansion in the volumes for



the all-round mechanization and automation of storehouse operations and the creation of new and highly productive loading and unloading mechanisms, robot engineering units and specialized transport equipment.

Thus the logistical supply system of USSR Gosagroprom is a very labor-intensive branch of material production. It can develop successfully only with the scientific development of current and long-range supply problems and upon the condition that a modern and highly mechanized logistical base will be created and highly skilled personnel trained for their tasks. In this system, the problems of economics, planning and administrative organization are intertwined together with constant improvements in production relationships and the development of productive forces in the country's agro-industrial complex.

In order to accelerate solutions for the problems confronting the supply system, under conditions involving the establishment of the APK economic mechanism, it will be necessary to raise radically the level and effectiveness of scientific studies and to introduce their results rapidly into operations. Scientific production associations provide the most favorable conditions for the advancement of works from an idea to practical use. The creation of an all-union scientific production association for logistical supply for APK enterprises, based upon presently unconnected scientific-research and planning institutes, experimental and production enterprises and organizations, will make it possible to strengthen substantially scientific support for logistical supply and to raise the effectiveness of the introduction of scientific works into the logistical supply branch.

The concentration of scientific, design and production collectives into a single scientific-production association will promote the elimination of duplication and a reduction in periods required for the development and introduction of new equipment into production, it will make it possible to expand and accelerate the work concerned with creating an automatic control system for supply and it will solve the problem of series production of storehouse equipment and specialized transport equipment for logistical supply enterprises of USSR Gosagroprom.

Complete solutions for the problems mentioned above, in connection with raising the effectiveness of the logistical supply system for APK enterprises, require close interaction and collaboration between the scientists and specialists of USSR Gosagroprom with workers attached to USSR Gosplan, USSR Gossnab, USSR Academy of Sciences and VASKhNIL [All-Union Academy of Agricultural Sciences imeni V.I. Lenin].

With the organization of USSR Gosagroprom, a unified system for logistical support for the APK began to form within the country. Its further development will make it possible to create the conditions required for satisfying more completely the requirements of APK enterprises and organizations for the means of production, for improving the quality of their servicing, for eliminating parallelism and the duplication of supply services, for simplifying economic relationships between consumers and suppliers, for achieving savings in the use of labor resources and for reducing overhead expenses. All of this taken

together will undoubtedly promote a strengthening of the logistical base for APK enterprises, it will raise the level of industrialization of agro-industrial production and it will achieve high final results in agriculture and in other APK branches.

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## AGRO-ECONOMICS, POLICY, ORGANIZATION

### ALTAY KRAYKOM HEAD ON COST ACCOUNTING IMPLEMENTATION

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[Article by F. Popov, first secretary of the Altay CPSU Kraykom: "To Affirm True Cost Accounting [khozraschet], To Fight Against Lack of Personal Responsibility and Mismanagement"]

[Text] Implementing the aims of the 27th CPSU Congress, the Altay Kray party organization persistently searches for ways of developing the economy in an accelerated way and increasing its efficiency. There are especially many unutilized potentials in our agro-industrial complex. As is well known, rates of agricultural production growth in Altay Kray have declined sharply during the last decade. Kolkhozes and sovkhoses have essentially marked time during all these years.

In order to fulfill the stepped-up assignments of the 12th Five-Year Plan, that is, to increase the gross production of agricultural products by 21 percent, including of grain 1.5-fold, party members and all the kray's workers have resolutely adopted a policy of production intensification, introduction of the collective contract and cost accounting, and increase in the yield of the created economic potential through the activation of the human factor.

At the April (1986) conference in the CPSU Central Committee on problems of the country's agro-industrial complex, cost accounting was called the high road of its development. In connection with this it was stressed that the improvement in the economic mechanism was planned along the line of strengthening and developing cost accounting relations--not imaginary, but genuine, not partial, but full cost accounting--and transferring all the links of the agrarian complex, primarily kolkhozes and sovkhoses, to self-supporting production [samookupayemost] and self-financing. Accomplishing the urgent tasks concerning the advance of the agro-industrial complex, the kray party organization is guided by the decree of the CPSU Central Committee "On Urgent Measures To Increase Labor Productivity in Agriculture on the Basis of the Introduction of Efficient Forms of Labor Organization and Cost Accounting."

The first results of this work were examined at the recent plenum of the kray party committee. The opinion of its participants was unanimous: In the kray it is time to wage a principled battle in a party-like manner against adherents of obsolete methods of management and to put an end to formalism

during the introduction of innovations. Cost accounting and the collective contract are beyond the experimental stage. To introduce these forms of management everywhere in rural areas now is not simply a wish, but an urgent demand of the times.

Practice has revealed a big diversity of forms of the collective contract and has shown that work on its introduction tolerates no routine. A formal approach to this work is totally contraindicated. Experience indicates that contract collectives work successfully when people are psychologically prepared for this, trust each other, and have an acknowledged leader. It is also important that they solve their internal problems on a democratic basis, are reliably provided with resources, receive competent help from specialists, and do not experience bureaucratic pressure and commanding.

Small collectives with land areas, livestock, and other means of production attached to them work most efficiently. For example, a link consisting of three milkmaids and two herdsmen on the Bastanskiy Sovkhoz in Mikhaylovskiy Rayon services 150 cows, annually obtaining 610 kg of milk per cow more than the average on the farm. Hence its production cost is lower and labor productivity much higher than on the sovkhoz as a whole.

The family contract also gives a high result. Husband and wife Baytalov on the Talitskiy Sovkhoz in Ust-Kanskiy Rayon service 680 ewes. In 1986 they received 1.6-fold more lambs than the average on the sovkhoz and attained a high labor productivity--together they gave products worth 280,000 rubles. Following their example, in the kray 854 families now work on a contractual basis. Under this contract form the labor of pensioners and adolescents is also fully utilized. The latter is also of great educational importance, because children become accustomed to labor from an early age. At the same time, large contract collectives--brigades and livestock sections--also work successfully in the kray.

Owing to the efforts of party committees and primary party organizations and extensive organizational and educational work, at present all the production subdivisions of the kray's kolkhozes and sovkhozes have mastered cost accounting, most of them, with the check form of expenditure control. Seventy-five percent of the arable land and livestock have been assigned to contract collectives. Almost all of them have changed over from the simple form of the contract, when only assignments for the volume of output and the rates for it have been presented to them, to improved forms. Cost accounting assignments for the entire set of expenditures are now practised. This stimulates not only labor productivity growth, but also the fight for economy.

The new mechanism of management demands that we go further and intensify contract principles both horizontally and vertically. About 100 kolkhozes and sovkhozes in the kray have mastered the all-round collective contract, under which not only the wages of ordinary workers and kolkhoz members, but also of specialists and economic managers, have been made dependent on final results. Workers of all links of the agro-industrial complex, including the staff of RAPO and of the kray agro-industrial committee, in the kray have been transferred to wages for the final result--based on the volume of production and sales of products--as of last June.



The continuous collective contract applied within the framework of all subdivisions and the enterprise as a whole is of great practical interest. For example, the Put k Kommunizmu Kolkhoz in Kosikhinskiy Rayon uses it successfully. The primary party organization has done a great deal here to improve cost accounting relations. Owing to this, the transition to the continuous collective contract on the kolkhoz has been made in stages during several years. The Institute of Economics and Organization of Industrial Production at the Siberian Department of the USSR Academy of Sciences has provided substantial methodological help to the farm. Since last year the labor of everyone--from the ordinary kolkhoz member to the board chairman--is remunerated on the basis of the obtained gross income. The economic mechanism has been simplified. Puzzling calculations of all possible bonuses and additional payments have disappeared. Instead of them a clear-cut wage procedure depending on the final result--the obtained gross income--has been established in every subdivision. As is well known, it depends only on the labor of kolkhoz members. After all, a particular contract collective seemingly sells all the products obtained by it to the farm at set internal prices and leaves the difference between income and expenditure for itself.

In order to lend this system a greater stability and strength, contracts between contract collectives and the administration have begun to be concluded for 5 years, not for a season, as was the case earlier. The necessary machinery, equipment, and livestock have been transferred to all subdivisions. As a result, they have become true proprietors. Now equipment is not allocated according to orders in an office, but is seemingly purchased by contract collectives with their own funds. Accordingly, they are also fully responsible for its safety and better utilization.

A special type of cost accounting relations between contract labor collectives and the administration is formed. Instead of a simple subordination of one side to the other, democratic forms of management based on contractual obligations and mutual responsibility are established.

The collective contract and cost accounting aim precisely at avoiding the squandering of live and past embodied labor by means of economic levers of effect. The efficiency of cost accounting increases considerably during the introduction of the check form of control. On the Progress Kolkhoz in Petropavlovskiy Rayon brigade and link leaders, heads of the repair shop and the motor garage, and other managers of subdivisions pay for all necessary materials, feed, and fuel, as well as services, with checks on the basis of planned accounting prices approved on the farm. The balance of the funds available to the collective is derived in checkbooks. Thus, managers of subdivisions themselves determine the financial results for a month, quarter, and year, not waiting for the accounts office to do this.

Internal cost accounting is based on full self-supporting production [samookupayemost]. If, for example, the collective of a livestock section or a brigade spends 50,000 rubles per month, but obtains output worth only 45,000 rubles, the loss--5,000 rubles--is detected immediately. Checks make it possible to easily establish in what items the overexpenditure has occurred, as well as to promptly take measures to eliminate it.

The check form of control teaches everyone to be economical. Owing to it, so-called "gatherings" while waiting for jobs have ceased on the kolkhoz. Kolkhoz members themselves now search for them. Whereas previously managers at times did not give thought to the expenditure limit, now the control mechanism will not permit that it be exceeded. It is clearly visible right away who has committed mismanagement. For decades kolkhozes have extensively put all feed production expenditures down to milk and meat production costs. However, under the check form of control order can also be introduced here. Livestock breeders ask a reasonable question: "What has this to do with us if silage is spoiled during storage, or hay is misappropriated?" After all, they do not get into animal feeders. Finally, mismanagement has a specific address, first name, patronymic, and family name--in the person of a certain worker. Responsibility is placed on him.

The kray party committee, striving for restructuring in work, tries to popularize the check form of control as extensively as possible. It is important that advanced forms of labor organization and wages do not get stuck at a halfway point and penetrate all the links of the agro-industrial complex without exception--from low-level collectives at agricultural enterprises to the managerial staff of RAPO and the kray agro-industrial committee.

An important economic experiment was begun in the Aleyskiy RAPO last year. It is based on the principle of self-supporting production [samookupayemost], planning from below, and granting economic independence to managers and specialists of kolkhozes and sovkhozes. Quite a good base was prepared for this there. In the rayon in the last 3 years about 300 independent cost accounting subdivisions functioned, most of them on a contractual basis. At first not everything turned out well for them. The incomplete inclusion of economic activity in the check form of control led to the fact that production costs increased and wages of livestock breeders grew more rapidly than labor productivity. The kraykom bureau condemned such practice.

Measures for eradicating such shortcomings have been developed and are implemented in the rayon. In particular, the check system of mutual settlements of accounts has been introduced everywhere and new statutes on cost accounting and on wages for kolkhoz and sovkhoz managers have been approved. Medium-level specialists have been included in brigades and links with wages based on the final result.

An advance at the rate of 80 to 90 percent of the salary is paid to kolkhoz chairmen, sovkhoz directors, and RAPO specialists and managers every month. A recalculation is made on the basis of annual results, depending on the final labor outcome. If the plan is overfulfilled and qualitative indicators are improved, an additional payment is due everyone accordingly.

What were the results last year? The rayon's kolkhozes and sovkhozes fulfilled the plans for the sale of grain, meat, milk, eggs, and wool to the state ahead of schedule. Qualitative indicators were improved. The weight of every young bull delivered to the meat combine reached 426 kg. The proportion of procured first-grade milk rose to 91 percent. As compared with the preceding year, production costs were lowered as follows: per quintal of

milk, by 4.8 rubles and per beef, by 20 rubles. The rates of labor productivity growth outstripped the rates of increase in wages 1.5-fold. The level of agricultural production profitability rose to 37 percent throughout the rayon.

Similar changes are also characteristic for the kray agro-industrial committee as a whole.

In Altay Kray in 1986 gross agricultural output rose by 15 percent. The established assignments for procurements of all types of agricultural products, with the exception of sugar beets and oil crops, were fulfilled. Altay kolkhozes and sovkhozes sold 3,170,000 tons of grain, 323,000 tons of livestock and poultry, 1,256,000 tons of milk, and 550 million eggs to the state. This is 7 to 14 percent more than the 1985 level.

The positive tendencies in the development of animal husbandry, especially in the meat shop, are gratifying. Last year meat procurements in the public sector, without taking into consideration the population's resources and the volumes of sale of young pedigree stock, increased by 14.5 percent.

An overall solution of problems concerning animal husbandry intensification on the basis of the introduction of advanced forms of labor organization, improvement in labor and technological discipline, and creation of better conditions for people's work at livestock sections helped us to better prepare ourselves for wintering. During 3 winter months milk yields per cow increased by 60 kg, as compared with the same period last year.

Of course, the attained results gladden us. However, their more profound analysis suggests serious thoughts to us. That is why. Party organizations and labor collectives have not fully overcome difficulties and have not attained the planned acceleration during the starting year of the five-year plan.

In what lies the main blunder? In the fact that not all party workers and economic managers have fully clarified to themselves that the introduction of cost accounting and the collective contract should be more actively combined with the intensification of agricultural production and that it is impossible to attain an acceleration without renouncing old methods of work and a formal attitude toward work.

The tasks of party committees and primary party organizations concerning the implementation of the policy of intensification and mastering of advanced technologies were often examined both at plenums and at meetings of the kraykom bureau and secretariat. Unfortunately, the worked out decisions were not implemented.

To fulfill the plan for the sale of grain to the state and to meet intraeconomic needs, the annual gross output of grain crops should be increased to 7 million tons, which is ensured with a yield at the level of 16.5 to 17 quintals per hectare. The attainment of such results is fully possible. The introduction of intensive technologies creates a fundamentally new situation in farming. On their basis spring wheat is grown on an area of

1.2 million hectares in the kray. By the end of the five-year plan the areas under this crop will increase to 1.8 million hectares and will occupy more than 40 percent of the areas sown with grain crops.

As practice shows, intensive technology gives the greatest effect when it is mastered on the basis of the developed zonal farming system and when these fields are assigned to contract collectives. In 1986 the yield of every intensive hectare totaled 18.3 quintals--5.6 quintals more than that of the areas sown with grain crops according to ordinary technology. A small increase. Why? Harvest losses occurred at all the stages of its formation. However, plant protection against pests and diseases proved to be true unplowed virgin land. Neither our scientific institutions, nor plant protection stations, nor kolkhoz and sovkhoz specialists were prepared for this work.

The scientific research institutions of the VASKhNIL's [All-Union Academy of Agricultural Sciences imeni V. I. Lenin] Siberian Department restructure the style and methods of their activity extremely slowly. For example, in the Altay Scientific Research Institute of Farming and Selection there are no studies connected with intensive spring wheat cultivation technologies. Nor have problems of mineral nutrition and protection of plants against pests and diseases been studied sufficiently.

Intensive technology demands the strictest discipline, competent actions on the part of farmers, consideration of the characteristic of every tract of land, and knowledge of the biology of plant development. That is why, we--all kraykoms and RAPO workers--must take measures to reorient the psychology of specialists, managers, and machine operators. They must not only sow and gather the harvest, as they were accustomed to doing earlier, but grow it painstakingly, especially as they have someone to learn this from.

For example, in the last 16 years the Experimental Production Farm imeni Dokuchayev of the Niva Altaya Scientific Production Association, on the average, has gathered 21.2 quintals of grain per hectare. The zonal farming system based on crop rotations with a brief rotation and soil and water protection methods of land cultivation has been overallly mastered here.

On the Prigorodnoye Experimental Farm at an ordinary livestock section, when the collective contract and the flow-shop technology are mastered, every mechanical milking expert services 100 to 110 cows, the annual productivity of each one of them totaling 4,000 kg of milk. A milkmaid obtains 450 tons of milk annually--5.8-fold more than the average throughout the kray.

However, this experience again is not widespread through the fault of managers and specialists of the kray agro-industrial committee. The kray's party bodies have remained detached observers to this day.

In the set of measures for transferring the economy to the path of intensification and acceleration a special role belongs to managerial personnel. The attained practical result is the main criterion, according to which the level of their work is evaluated.



Unfortunately, by no means did economic managers renounce inertia and obsolete habits and views everywhere in the kray. Not everyone was prepared for work according to new methods. Under these conditions some rayon party committees saw almost the only way out in personnel replacement. Sixty percent of the sovkhoz directors and kolkhoz chairmen were replaced in the kray during the 11th Five-Year Plan. Of course, there were forced replacements. For example, every tenth manager out of this number was dismissed, because he compromised himself morally. Often managers do not have enough organizational abilities and competence. On the whole, however, such a replaceability is unjustified and is the consequence of weak work by party committees and primary organizations.

Setting the task of stopping such a personnel leapfrog, the kraykom intensifies its work on selecting, disposing, educating, and training personnel. The winter period is now utilized for a mass study of applied economics, efficient labor organization, and advanced technologies.

Base farms for working out the elements of the collective contract and cost accounting have been assigned in all rayons. These are kinds of schools for the economic training and retraining of personnel. Party workers, specialists, and farm managers are trained systematically here.

We also use other forms for personnel training and for an extensive popularization of advanced experience. Every month workers of kray and rayon party, soviet, and agricultural bodies leave for meetings of economic councils and balance commissions on farms, where the results of fulfillment of cost accounting assignments are reviewed. An interesting seminar was held in Smolenskiy Rayon. First secretaries of gorkoms and raykoms, chairmen of RAPSO soviets, kolkhoz chairmen, sovkhoz directors, and workers in economic services of all base farms took part in it. There is really something to learn in this rayon. Almost 200 brigades and links work on the basis of a collective contract. All arable land, the entire stock of cows, sheep, and poultry, and two-thirds of the young cattle and hogs have been assigned to them. The contract is well backed with a planned introduction and improvement of intracost accounting and a rise in the level of economic work. Care is taken to strengthen the composition of brigades with party members. Party or party-Komsomol groups have been established in low-level labor collectives and party organizers have been approved.

Party members advise every worker of the essence of present changes in production, strengthen collectivist principles, and strive for an increase in people's responsibility for final results. For example, problems concerning the organization of socialist competition, observance of labor discipline, and fulfillment of party assignments by party members are discussed at open meetings of the party group of the dairy section at the Pervomayskiy division. Political activities with livestock breeders and zootechnical training are regularly held at the section's red corner. The stand "Who Is Ahead," which reflects the course of socialist competition, is renewed every day. Milkmaids always know who has the highest milk yield and who lags behind. Competition terms have a provision stating that individuals, who break discipline and allow a deterioration in the quality of output, are responsible for this financially.

The section's party members are not only good production workers, but are also actively engaged in public life. Party member Ye. Glushkova, who is a calf attendant, as a deputy of the rayon soviet, in accordance with instructions from voters exercises public control over the work of the receiving center of the domestic service combine in the settlement of Pervomayskiy. Milkmaids and herdsmen, without going to the rayon center, acquire necessities and goods in big demand. At the receiving center it is possible to place an order for sewing clothes and to deliver inoperative household equipment for repairs.

Unfortunately, matters are not organized in such a way everywhere. The kray's party committees and primary organizations still expand the work connected with an improvement in production organization and in people's working and living conditions slowly and in an insufficiently active manner.

Responsible and complex tasks are set for the kray's agro-industrial complex during the second year of the five-year plan. They require a more rapid and profound restructuring in the activity of all the links of the agro-industrial complex. Party members and all rural workers, actively joining in socialist competition for a prescheduled welcome for the 70th anniversary of the Great October Socialist Revolution, persistently strive to successfully fulfill the assignments of 1987 and to establish a reliable basis for realizing the programs of the five-year plan as a whole.

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## TILLING, CROPPING TECHNOLOGY

UDC 633.1

### IMPORTANCE OF INTENSIVE TECHNOLOGY FOR RSFSR GRAIN CROP

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[Article by B. Martynov, Deputy Chairman of RSFSR Gosagroprom [State Agro-Industrial Committee]: "Intensive Technologies: Possibilities and Omissions"]

[Text] During the current five-year plan the grain farmers of the Russian Federation will be faced with a serious and responsible task--to increase average annual gross grain yield by 34-35 percent. In order to accomplish this, average productivity of grains must be increased by 6.2 quintals and brought up to 20 quintals per hectare by 1990. We must openly say that the goal is not a simple one but it is attainable. What reserves to grain farmers have at their disposal to accomplish this goal?

The most important aspect of and main direction in the development of the grain industry and in increasing its stability is the extensive introduction of intensive technologies for cultivating grain crops. The practical experience of recent years has convincingly demonstrated their high level of effectiveness. For example, last year average productivity of grains cultivated according to advanced technology equalled 24.2 quintals per hectare in the republic. This is significantly higher than in regular crop production.

Having made growth in grain production a top priority, the republic's kolkhozes and sovkhozes this year increased the area in which grains are to be cultivated according to intensive technologies to 16.7 million hectares. Preliminary data shows that the best results were achieved by those enterprises in which the entire complex of measures was strictly adhered to and to which sufficient quantities of necessary resources were allocated. Thus, in Krasnodar Kray each "intensive" hectare has yielded an additional 10 quintals as compared to regular crops, according to preliminary data. The plan for grain procurement has been fulfilled by 102 percent. In Ust-Labinskiy Rayon an area of 39,200 hectares produced an average of 54.2 quintals of winter wheat grain per hectare. As a result, in comparison with the quota of 140,000 tons, the enterprises of this rayon sold the state 151,000 tons of wheat, including 121,000 tons of strong wheat. In Timashevskiy Rayon the productivity of winter wheat equalled 53.5 quintals per hectare. As a result, grain farmers overfulfilled the plan by a factor of 1.5.

The enterprises of Stavropol Kray have harvested 30.7 quintals per hectare of intensive crops, thereby fulfilling the government plan by 113 percent. These types of crops yielded 31.3 quintals per hectare in the kolkhozes and sovkhoses of Moscow Oblast, 42.1 quintals--in North Osetiya ASSR and 34.4 quintals in Dagestan. The enterprises of the Bashkir ASSR threshed 29.6 quintals of spring wheat per hectare, of the Tatar ASSR--29.4 and of Kuybyshev Oblast--22.5 quintals. As a result, the plan for the sale of grain to the state by these oblasts and autonomous republics was fulfilled by 102-132 percent.

It should be noted that the cultivation of grain crops according to intensive technology not only increases productivity but also improves grain quality. This year, with the increase in the area for cultivating strong varieties of winter and spring wheats, there has been a sharp increase in the delivery of high-quality grain to the state. As of 1 October the plan for the procurement of strong wheat was fulfilled by 174 percent throughout the republic. There has also been significant growth in the procurement volume of durum wheat. The largest quantity of high-quality wheat was delivered by the kolkhozes and sovkhoses of Krasnodar, Stavropol and Altay krays, Rostov, Orenburg and Kuybyshev oblasts and the Kabardino-Balkar ASSR.

At the same time, new technologies are raising the economic effectiveness of grain production. Thus, the experience of cultivating winter grain crops according to intensive technology in Krasnyy Gornyy Kolkhoz of Lipets Oblast has shown that each hectare of intensive crops will provide 67-100 rubles more in profits than regular crops. In the enterprises of Khaybullinskiy Rayon of the Bashkir ASSR such crops yielded additional product worth 206 rubles more than regular fields. And profits comprised 84 rubles per hectare. Net income per hectare of intensive crops in Stavropol Kray equalled over 144 rubles. The profitability of grain production exceeded 80 percent. For the sale of grain with an elevated quality the kray's enterprises received an additional 30 million rubles. The kolkhozes and sovkhoses of the Kuban will receive an additional 50 million rubles for high quality grain.

We can extend the list of krays, oblasts and autonomous republics in which the introduction of intensive technology has considerably improved the situation within the grain industry. The results everywhere will be unequivocal--success is achieved in those places, and only in those places, where all elements of technology are carried out completely and with quality, where specialists and directors have firmly understood that within intensive technology there are no main and secondary components, that all components are important to the same degree and that violations of or failure to carry out any one of them will result in underproduction of the harvest and in decreased quality.

Intensive technology is a type of fusion of modern science and practice. It does not tolerate imitation or work by approximation. More precisely, intensive technology is the technology of the specific field, one which has been elaborated with a consideration of the field's agrochemical and phytosanitary condition and of the needs of the crops depending upon their developmental phase and stage of organogenesis. For this reason, the



agrochemical service and the service for the chemicalization and protection of plants must establish a "dialogue" with plants for the entire course of vegetation and they must do everything that is necessary for the development of the planned harvest. In particular, it is especially important to retain the flag (upper) leaf until the end of the growing season because this leaf most intensively supplies wheat grains with plastic substance, and the premature loss of the leaf would result in a significant harvest shortfall.

What else should practitioners focus their attention on when summarizing the work results of farmers during the first year of the 12th Five-Year Plan? First of all we should note the poor work of the agronomic service as regards mineral fertilizers. Despite the fact that sufficient quantities of phosphorus fertilizer were allocated for use with intensive crops, many enterprises did not utilize it completely. Thus, in the kolkhozes and sovkhozes of Perm Oblast the norm for the application of phosphorus decreased by a factor of 2.5. The enterprises of Mari ASSR and Chelyabinsk, Tambov, Kurgan, Kemerovo and Novosibirsk oblasts decreased phosphorus doses significantly.

In some kolkhozes and sovkhozes there were instances of another extreme--elevated doses of nitrogen fertilizers, as a result of which the winter-hardiness of winter crops decreased. Winter wheat crops in Voronezh Oblast suffered greatly as a result of this. In some enterprises of Siberia and the Urals nitrogen doses were also elevated for spring wheat crops. This hindered their maturation and brought about lodging. Such areas were subject to more diseases and infestations, especially with aphids and thrips. Unfortunately, it must be stated that in these regions the role of potassium fertilizers and of late non-radical top-dressing with nitrogen, which improve the quality of wheat grain, is underestimated.

We should also note the extremely poor work being done with regard to plant protection in the kolkhozes and sovkhozes of Altay and Krasnoyarsk krais and Novosibirsk, Omsk and several other oblasts. The enterprises here were not prepared for the timely fulfillment of work to protect plants and to utilize TUR [Retardant preparation for crops].

Also weakened was control over the quality of treated seed, as a result of which the norm for the utilization of seed fungicides decreased. Such cases have occurred in 25 rayons of Altay Kray. In Sokurskiy, Mashkovskiy and Berezovskiy sovkhozes of Maslyaninskiy Rayon of Novosibirsk Oblast, for example, only 250 grams of baytan [a seed disinfectant] were utilized per ton of seed. In a number of rayons land technology was utilized in an unorganized manner, which had a negative effect on the schedule for carrying out chemical weeding. It is for this reason that crops became infested with weeds in Kubanskiy Sovkhoz of Kalmanskiy Rayon, Altay Kray, even with the availability of a technological track.

In the enterprises of Krasnodar Kray, the Chuvash and Tatar autonomous republics and Penza and Ulyanov oblasts there were instances in which crops were treated with pesticides without a consideration of their effect on the environment. This resulted, in particular, in a sharp drop in the populations

of useful insects and in the unjustified expenditure of plant-protection agents.

For this reason, the workers of the agronomic service must organize work in such a way as to achieve the timely use of pesticides and fertilizers in the required doses. Where necessary, we should expand the network of chemicalization stations and strengthen the plant-protection service. In connection with this, deserving of attention is the experience of Krasnodar Kray, the enterprises of which have 80-90 percent of the plant-protection specialists they need. There are agronomists-chemists in many kolkhozes and sovkhozes.

It is also essential to radically change the attitude of specialists toward the certification of fields earmarked for intensive crops and toward the development of measures on the effective use of mineral fertilizers and pesticides. This work must be carried out not formally but in such a way as to produce the planned harvest on every field. Considerable aid in this can be given by the organization of dispatcher control over the fulfillment of technological operations, as is done in the enterprises of Lvov Oblast. Similar experience has been accumulated in the Russian Federation, as for example in the enterprises of Orenburg Oblast. Here in the majority of kolkhozes and sovkhozes integrated schedules have been developed for the fulfillment of all necessary measures. Constant communications have been established between enterprises and the RAPO [Rayon Agro-Industrial Association] in order to render the necessary aid. Extensive work in this area is being carried out in Krasnodar Kray, where in all rayons base enterprises have been designated for the introduction of dispatcher control. However, in a number of regions workers have an irresponsible attitude toward this important work. This refers first and foremost to Chelyabinsk and Kirov oblasts.

In assimilating intensive technologies, we should not forget that productivity depends to a large extent on the very level of farming quality. For example, factors that determine the harvest, such as the accumulation and preservation of moisture in the soil, are secured long before sowing. There are many processes involved here. They include the preparation of windbreak fallow, the use of moisture-saving technology for cultivating the soil and the plowing of fall-plowed fields in good time. However, of this entire complex I would like to especially emphasize the role of windrows under conditions of insufficient moisture. According to the observations of the All-Union NII [Scientific-Research Institute] of the Grain Industry, windrows help to accumulate an additional 50-60 millimeters of productive moisture per hectare. A greater reserve of moisture in fallow provides better supplies of moisture for spring wheat during the vegetative period, thereby decreasing the effect of early summer droughts. As a result, the yield of this crop increases by 2-4.5 quintals per hectare.

An important factor in the intensification of the grain field is the work to increase soil fertility. Here special attention should be given to organic fertilizers. It is essential to apply no fewer than 13-15 tons of organic fertilizer per hectare of intensive crops on chernozem and chestnut soils in the North Caucasus region; 7-9 tons on gray forest, chernozem and chestnut

soils of the Transvolga region; 9-10 tons on chernozems of the Central Chernozem region; and 7-9 tons on soddy-podzolic and gray forest soils, and podzolized and leached chernozems of the Central and Urals regions of the Non-Chernozem Zone. We must more widely utilize effective methods of priming the soil, such as KAKhOP [Comprehensive Agrochemical Field Cultivation]. However, in the enterprises of Novosibirsk and Omsk oblasts and Altay Kray this agrochemical complex has not received the necessary widespread use. From this arise those shortcomings in work with organic fertilizers which exist in many enterprises of Siberia.

Other no less important factors in producing large harvests from intensive crops are the selection of a variety, seed quality and sowing rate. But unfortunately even here not everything is done the way it should be. For example, for the 1986 harvest only 6 percent of the seed sown by enterprises of Perm Oblast was first class, and in Sverdlovsk Oblast--4 percent. Seed was treated with film-formation agents in insufficient quantities in Ryazan, Bryansk and Kirov oblasts and in the Chuvash ASSR. Many kolkhozes and sovkhoses have tolerated elevated seed-sowing rates. Thus, for Tula Oblast the optimal sowing rate is considered to be 4-5.5 million grains of winter wheat. But Kolkhoz imeni Lenin of Uzlovskiy Rayon sowed 6 million on intensive fields, and Kollektivist Kolkhoz of Plavskiy Rayon--6.5 million.

There are many shortcomings in soil preparation as well. In Bryansk Oblast this year 30 days before sowing of winter crops only 7 percent of the area was ready, in Moscow Oblast--9 percent, in Sverdlov Oblast--24 percent and in the Chuvash ASSR--31 percent. Naturally this had an effect on the subsequent operations of the field conveyor. In Moscow Oblast 6 percent of winter crops were sown later than the optimal period, in Gorkiy Oblast--14 percent, in Sverdlovsk Oblast--16 percent and in the Mordovian ASSR--23 percent.

Serious shortcomings of another type also exist, those which do not depend on kolkhozes and sovkhoses. First and foremost this includes interruptions in the supply of mineral fertilizers and the shortage of machines for applying organic and mineral fertilizers, of sprayers, of disinfection units and of other equipment. Because of this kolkhozes and sovkhoses find it necessary to make their own equipment. However, the quality of these kinds of homemade products does not always meet the needs of intensive technology.

Further, in a number of oblasts, krays and autonomous republics effective measures are not being taken to secure enterprises with storehouse facilities or to renovate existing storehouses. It should also be noted that technological centers for the introduction of intensive technologies are not rendering sufficient aid to enterprises. The republic's gosagroprom sees this incomplete work and together with other departments is taking measures to deal with it. However we should note that the main shortcoming in the introduction of intensive technologies remain--gross deviations and errors continue to be tolerated by kolkhozes and sovkhoses. It is this that explains the fact that in many enterprises of Perm, Sverdlovsk, Ryazan, Tula and Tambov oblasts and Mari and Udmurt autonomous republics intensive crops often do not provide the planned harvests.

Errors tolerated during the introduction of new technologies can be explained to a significant degree by the inadequate training of cadres, by the decreased sense of responsibility of directors and specialists of kolkhozes and sovkhozes, and by the slow psychological restructuring and assimilation of the main requirements of intensive technology--that the harvest is developed and protected in the course of the entire vegetative period.

When analyzing the results of cultivating grains and other crops according to advanced technologies, the agro-industrial committees of oblasts, krais and autonomous republics must not only expose the shortcomings that are being tolerated but also indicate specific measures to eliminate them. Extensive work must be done to teach cadres the special characteristics of cultivating agricultural crops according to intensive technologies. This work must be organized in such a way that every specialist and every machine operator will understand his role and his place in the matter of intensifying the grain industry and will adjust himself to working in the new way. This is especially important since the scale of cultivating crops using the intensive method will be growing unceasingly. By 1990 44 percent of the grain fields will already be "intensive." Enormous material resources--mineral fertilizers, pesticides, new equipment--will be available and will have to be used knowledgeably; the planned increase in yield will have to be achieved. In connection with this it is proper to note that the largest return on allocated resources comes from the use of a permanent technological track, which enables us to more efficiently utilize fertilizers and plant-protection agents. According to preliminary data, this year such crops will provide additional yield in the RSFSR as a whole of about 10 quintals per hectare as compared to intensive crops with which an intensive track is not used.

The complexity of tasks standing before the republic's enterprises can also be explained by the fact that beginning next year in addition to cultivating winter grains and spring wheat according to intensive technology, more legumes, buckwheat and millet will be cultivated in the same manner. We must fully learn all the "secrets" of cultivating these crops.

A large degree of responsibility in increasing grain production is placed on enterprises of those regions where the largest proportion of intensive crops is centered. First and foremost this includes the Northern Caucasus, Central Volga and Ural areas. During the current five-year plan the area in such crops will grow sharply in the Non-Chernozem Zone.

The agroindustrial committees of these and other regions should implement a wide range of measures directed at raising the stability of the grain industry.

Experience confirms the direct relationship between the level of production intensification and collective contracts. Contractual links this year cultivated 80 percent of grain crops, including practically all of those being raised intensively. But even here not everything is going well. Contracts are being introduced slowly in the enterprises of the Dagestan ASSR, where only 34 percent of the plowland has been assigned to brigades and links. About half the plowland has been assigned to such brigades in Kuybyshev Oblast and the North Osetian ASSR.



The fulfillment of stable grain-procurement plans by each enterprise, rayon, oblast and kray is a task of great national importance. We can deal successfully with it with the help of the extensive introduction of intensive technology.

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## TILLING, CROPPING TECHNOLOGY

### FURTHER IMPLEMENTATION OF INTENSIVE TECHNOLOGY

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[Article by A. Zholobov, member of the USSR State Agro-Industrial Committee Board: "Intensive Grain Production Techniques"]

[Text] Grain crops make the fullest use of the bioclimatic potential of the regions in which they are cultivated. They ensure a high yield given comparatively low outlays in droughty zones. Grain farming is the basis of the entire agro-industrial complex and is constantly at the center of the attention of the party, soviet and economic authorities. The population's food grain requirements are catered for in the country in guaranteed fashion. The Soviet Union is in first place in the world in terms of the gross wheat harvest--the basic food crop.

Compared with the prewar level, grain production has increased by a factor of 2.5, given a practically unchanged area of plowland in grain farming (sown areas of cereals and fallow). With the introduction into the rotation of 40 million hectares of virgin land it has remained at the prewar level--140-145 million hectares. The proportion of grain production in droughty areas has increased here.

The strengthening of the material-technical base and the improvement of farming have made it possible to raise the yield of grain production. On this basis the gross grain harvest in the acutely dry years of 1981 and 1984 was 50 million tons more than in 1963 and 1975, which were similar in terms of weather conditions. However, the level of grain production is not catering for animal husbandry's increased concentrated feed needs.

Speaking about problems of the development of the agrarian sector of the country's economy at the current stage, M.S. Gorbachev emphasized at the CPSU Central Committee June (1986) Plenum the particular seriousness of the impending task of ensuring the stable production of plant-growing products, primarily grain and fodder crops. "This is the main problem," he said, "on whose successful solution the stable development of animal husbandry, kolkhoz and sovkhos income and the economy of the processing enterprises largely depend" (1).

In the current 5-year plan it is necessary to increase the grain harvest by 60 million tons, that is, increase the yield by no less than 5 quintals per hectare on average. There has never before been such a growth rate, and it

cannot be achieved by the customary methods. Fundamental changes are needed in grain farming for an appreciable increase in the returns from the resources invested therein.

The facilities for this have been created. The scientifically substantiated systems of farming elaborated following the All-Union Agronomy Conference (1980) have in fact become an agronomical charter on the majority of farms, and the standard of farming and the competence of management of the sector have increased. There has been a pronounced, and in many zones, fundamental, improvement in the composition of the predecessors in the crop rotations (clean and occupied fallow, perennial grasses, leguminous crops), and the amount of anti-erosion soil cultivation and land improvement has increased.

A leading factor of the intensification of farming at the present time is its chemicalization. Whereas in the Eighth Five-Year Plan 2.6 million tons of mineral fertilizer were applied to all grain crops, in the Ninth, 4.7 million, in the 10th, 6.5 million and in the 11th, 7.7 million tons, in the current 5-year plan the bulk of the increase in the supply thereof is being channeled toward these crops, and in 1990 this figure will have reached 16.6 million tons.

The main task is securing an increase in the returns from mineral fertilizer inasmuch as in recent years the recoupment rate of fertilizer in many areas has fallen and been below the norm. An analysis shows that a simple increase in the application of mineral fertilizer without an improvement in the techniques of its application leads, as a rule, to a growth of the weediness of the soils and disease damage to the plants and the lodging of the sown areas. Fundamental changes in the technology and also the technique of fertilizer application are needed to avoid this. With small doses of mineral fertilizer (below the optimum) the evenness of its application has not been of great significance, but with an increase in the dose thereof unevenness becomes impermissible (application of doses of applied fertilizer over and above the optimum not only does not produce results but reduces the harvest here).

The technique of the split application of nitrogen by phase of plant development combined with retardants--chemical preparations controlling the growth of the cereals and preventing their lodging--was developed to lessen the negative impact of high one-time doses. A transition from the "I have sown--I have harvested" principle to the control of plant growth is being implemented, the optimum development of vegetative bulk in each period balanced with growth factors is being achieved and the proportion of grain in the overall harvest is increasing on this basis.

With the growth of the application of fertilizer there is increased significance in the balanced nature of the presence of nutrients in the soil, particularly with respect to phosphorus, which in many zones is at the minimum level. A 20-30-percent increase in the efficiency of phosphorus fertilizer is secured given a transition from the broadcast method to its local application to the stably moistened layers of the soil, whereby the phosphorus is less bound therein and assimilation by the plants is improved.

A most important and frequently determining factor of the increased recoupment rate of the mineral fertilizer and a high harvest is the system of the integrated protection of plants against pests, weeds and, particularly, disease envisaging strict demands on operating discipline given treatment of the sown areas with a collection of highly efficient herbicides, fungicides, insecticides and retardants (compliance with the application timeframe and accuracy of dosage with regard for the condition of the sown areas and also the damagability threshold of insects and plant disease). The demands made on the varieties and preparation of the seeds are changing fundamentally, and the corresponding adjustments are being made to the agricultural technology of the main and presowing cultivation of the soil and sowing techniques (the seeding norm, the sowing timeframe, embedding depth and evenness of the distribution of seeds in the row and so forth).

As a whole, intensive techniques mean an interlinked and interconditioned set of methods of the cultivation of agricultural crops providing for the full use of bioclimatic potential and the proportional nature of all factors of the formation of the harvest in accordance with the needs of the plants per stage of their development.

The transition to progressive techniques brings about the need for the comprehensive and balanced supply to the farms of fertilizer, pesticides, machinery for their application and other producer goods. Disproportions in the supply of resources per the "a little less for everyone" principle are impermissible here. The disturbance of proportionality in providing resources and the tardy or substandard performance of agricultural methods sharply lower the effectiveness of the entire technology as a whole and the recoupment rate of the increased outlays. For this reason a fundamental principle at the current stage of farming is the optimum concentration of resources in areas where their greatest returns may be secured.

A TECHNOLOGICAL REVOLUTION IS ESSENTIALLY UNDER WAY IN GRAIN FARMING at the present time--the transition to intensive cereal-cultivation techniques is being implemented at a rapid pace. Cereals were cultivated in 1984 per the new techniques over an area of 2.6 million hectares, in 1985, of 19 million and in 1986, of 31 million hectares, and by the end of the 5-year plan the area thereof is to have been raised to 50 million hectares.

What are the results of assimilation of the intensive techniques? Thanks to them, an additional 16 million tons of grain were obtained in 1985, and in 1986--the second year of the mass assimilation of the new techniques--30 million tons more grain was harvested than on average in the last 5-year plan, and, furthermore, according to our calculations, approximately 80 percent of the increase was obtained from intensive techniques. There has been a considerable increase in the quality of the commodity grain, particularly food wheat. Procurements thereof corresponding to the conditions of strong, valuable and durum wheat amounted to 30 million tons compared with 20 million in 1985 and 15 million tons on average in the past 5-year plan.

It is even more important that there has been a considerable growth of the farmers' skills, competence in leadership of the sector and operational discipline. It may be said that we have succeeded in overcoming the



sluggishness, conservatism and initially quite prevalent open nonacceptance of the new methods. Grain farming has begun to move toward a new technological level.

Despite the difficult weather conditions of the spring and summer of 1986, a yield of 32 quintals per hectare was obtained from 12 million hectares of winter crop sowings cultivated in accordance with intensive techniques (26.98 quintals per hectare in 1985), and with the application of a technological run over 5.7 million hectares, 36.5 quintals per hectare (31.7 in 1985); and 17.9 quintals per hectare of spring wheat from 11.4 million hectares. In the Ukrainian SSR 38.4 quintals per hectare of winter crops were harvested from 3.5 million hectares of sowings, the addition to the harvest constituting 14 quintals per hectare. Some 44-48 quintals per hectare of high-grade grain were obtained in Cherkassy, Khmel'nitskiy, Ternopol and Transcarpathian oblasts, and on many farms of the Ukraine, 60 quintals per hectare. In individual fields the harvest amounted to 80 quintals per hectare, and on Khmel'nitskiy Oblast's Kolkhoz imeni XXV syezda KPSS on an area of 10.6 hectares, to 112 quintals per hectare. A few years ago such grain yields were achieved only on the allotments of experimental establishments, but today they are attainable for many kolkhozes and sovkhoses. This points to the great latent possibilities of intensive techniques.

As a result more than 4.5 million extra tons of winter grain was harvested in the republic thanks to the assimilation of the latter alone. A record cereals harvest (more than 42 quintals per hectare) was cultivated in 1986 in Krasnodar Kray. Some 45.5 quintals of winter crops per hectare were harvested from an area of 1.3 million hectares here, that is, almost 1 ton per hectare more than with the use of customary techniques. The extra harvest of strong and valuable wheat grain in the kray amounted to 1.2 million tons, and in this kray's Ust-Labinskiy, Timashovski and Dinskiy rayons 52-55 quintals of grain per hectare were obtained on 130,000 hectares of winter crop sowings cultivated in the new way, and on Ust-Labinskiy Rayon's "Ladozhskiy" Sovkhoz, 60 quintals per hectare.

Speaking at a meeting of the party aktiv of Krasnodar Kray, M.S. Gorbachev gave the successes of the Kuban farmers in the intensification of grain farming high marks. He noted that the first step in the direction of the introduction of intensive techniques was a surge in an increase in the yield to a level in excess of 40 quintals per hectare.

In Stavropol Kray 31 quintals per hectare of winter wheat cultivated per the new techniques were obtained on an area of 900,000 hectares. The addition to the harvest constituted 9.6 quintals per hectare. An additional 850,000 tons of high-grade grain were harvested. Under the conditions of the kray's arid farming the harvest exceeded 40 quintals per hectare (an addition of 15 quintals per hectare) on an area of approximately 30,000 hectares in Georgiyevskiy, Mineralovodskiy and Predgornyy rayons, and on a number of farms of the kray, 50 quintals per hectare.

"This is grain," M.S. Gorbachev said, "that we are currently purchasing for foreign currency, comrades.... See what an economic and political task is

being accomplished on the basis of this approach to the grain question. We must accomplish this task" (2).

Not only additional high-quality grain has been obtained as the result of the introduction of intensive techniques. There has been a rise in the level of responsibility and interest of the farmers, machine operators and specialists in the work, which has been brought about by their psychological frame of mind, precision and exactness in work.

On this basis there has been an increase in the recoupment rate of invested capital. Thus on Lipetsk Oblast's Kolkhoz "Zavety Iliche" the cultivation of winter wheat per intensive techniques on 600 hectares with a yield of 50.8 quintals per hectare ensured a profit of more than R40,000. The prime costs of a quintal of grain compared with the customary agricultural technology declined by R2.5. An additional R70 plus of produce were obtained per hectare in Krasnodar Kray. Profit from the sale of the high-grade grain amounted in 1986 to R50 million, including R36.5 from the sale of strong wheat.

However, the anticipated results are not yet being obtained from the application of intensive techniques in a number of oblasts and krays and on many farms. And it is a question here not only of a shortage of hardware components, fertilizer and toxic chemicals but also of the work of the farms themselves, where a scientifically substantiated system of farming as a whole has not been assimilated and all elements of the new technology are not being strictly sustained; use is not being made of the best agricultural crop varieties and predecessors. Thus in Kurgan Oblast last year there were approximately 400,000 hectares of clean fallow, but less than half of these best predecessors were assigned for cultivation of crops per intensive techniques. In Orel Oblast and the Mordovian and Chuvash ASSR's up to 20 percent of winter crops were accommodated in soil not prepared in good time. In Tselinograd, Pavlodar and Novosibirsk oblasts and Krasnoyarsk Kray up to 25 percent of cereals was sown on fallow land which was plowed up late, which led to the heavy infestation of the sown areas. Fertilizer was not applied to the soil in the necessary doses everywhere, and 10-15 percent of the sowings in Gorkiy, Tula and Bryansk oblasts were accommodated on acid, unlimed soils. On part of the area the sowing was carried out with nondisinfected seeds, and in Tyumen, Kurgan and Kemerovo oblasts up to 15-20 percent of the spring wheat was sown with third-grade seeds. In the Tatar and Bashkir ASSR's 25 and 50 percent of the winter crops respectively perished from snow mold, which was not combated.

The practice whereby resources allocated for intensive techniques are used for other purposes or used inefficiently has not disappeared. Thus in Moscow, Tambov and Orel oblasts inadequate use is being made of a most important component of the new technology--the split application of nitrogen--and in some places top-dressing with nitrogen fertilizer is being performed by aviation, despite insufficient soil moisture (Kherson Oblast). On certain farms of the Kazakh SSR the sown areas are being treated with fungicides considerably behind schedule.

Not all machines undergo special adjustment to the appropriate work schedule. Due attention is not paid everywhere to growth regulators. Sometimes the

fungicides are applied by aircraft, which reduces their effect. In a number of places farm leaders are linking the introduction of these techniques primarily with an opportunity to acquire extra equipment, fertilizer and pesticides, but are continuing to work on the grain field in the old way. There are many bottlenecks and problems in the organization of the provision of the farms with resources. The supply of mineral fertilizer within the necessary timeframe and balanced in respect of assortment has not been achieved, as a whole. In connection with the shortfall in the receipt of phosphorus fertilizers in many oblasts of the Ukraine approximately one-third of them was not applied to the 1986 harvest. Insufficient phosphorus fertilizers are being allocated for the eastern parts of the country. There is a shortage of them here even for the initial application with the cereal seeds, although this method secures an addition of 3 quintals of grain per hectare. The procedure for the allocation of fertilizer needs to be revised also--it should be based on the returns therefrom. Despite the fact that the CPSU Central Committee June (1986) Plenum and M.S. Gorbachev's Krasnodar speech emphasized that resources need to be directed primarily to where they secure the maximum returns, fertilizer continues frequently to be allocated per the level that has been reached, without regard for the efficiency of its use and the characteristics of the soil. Frequently farms are forced to apply compound fertilizers instead of simple ones, of which there is a shortage, specifically those containing phosphorus.

It is essential that chemical industry sharply enhance the quality of the manufactured mineral fertilizer, particularly in terms of its granulometric composition, and produce nitrogen fertilizer only in protective film and manufacture more highly efficient pesticides, fucoid preparation, growth regulators in crystal form, multicomponent preparations for seed treatment with the inclusion of their disinfectants, stimulators and microelements.

Increased demands when assimilating intensive techniques are made on the machine builders. Currently the top-dressing of the plants with nitrogen fertilizer is performed by old spreaders with a rated unevenness of distribution of the fertilizer of the order of 30-35 percent. Two thousand bar spreaders proved inoperative owing to design shortcomings and low quality of manufacture.

The manufactured sprayers have a considerable unevenness of liquid consumption between the dusters amounting to 20, and on sloping terrain, 40-60 percent. There are big losses on account of this--very small drops are borne off by the wind, the big ones fall to the ground, and, furthermore, the use of these sprayers requires a large number of operations per field. The shortage of wide-span spayers and also units for the preparation of the solutions is a bottleneck reducing the efficiency of the application of the new techniques.

The country's grain field is at present furnished with machinery corresponding to the new requirements to the extent of only 9.4 percent for the top-dressing of sown areas and the intra-soil application of fertilizer, 37 percent for sprayers and 44 percent for units for the preparation of herbicide solutions.

To ensure the high quality of mechanized operations in the cultivation of cereals it is necessary to accelerate the creation of attachment-free wide-



span combined grain sowing machines equipped with automated systems for disconnecting the seed distributor for track formation and control of the operating width of the span at the time of headland seeding.

Intensive techniques provide for the maximum reduction in the duration of the harvesting and losses of cultivated grain. The retooling of the harvesting and the transition to the new "Don" combines and wide-span reapers is under way at the present time. It is expedient to supply them primarily to the zones where the new techniques are being applied extensively. At the same time, however, for the full use of the possibilities of the new combine it is necessary to implement a set of measures pertaining to the creation of facilities for its storage and servicing and to reequip the weighing and threshing facilities to ensure the continuous processing of the grain coming in from the field.

To do away with the substantial losses of products on the threshing floors and create facilities for the primary processing and storage of the grain directly on the farms it is necessary to speed up the manufacture of metal store-silos with a complete set of the necessary equipment. And to organize the construction on the farms of rapidly installed covered threshing floor-awnings with asphalted floors suitable for the storage of equipment in the winter period.

The intensification of grain production requires scientific support which outpaces practice. Until recently agricultural science has developed and perfected individual procedures, ways and methods of increasing the yield of cultivated crops. Discrete, purely analytical research has predominated in the subject matter of research establishments. S&T developments have been performed noncomprehensively, without the linkage of individual components in a single technology of production of the end product and for this reason frequently fail to find an application in agricultural production.

The technology centers set up in the country recently are intended to upgrade and perfect intensive techniques of the cultivation of agricultural crops in the moist zone and in droughty areas; spring wheat after fallow and nonfallow predecessors. Versions of the new techniques also applicable to specific soil-climatic conditions are to be developed for other crops.

Results from the introduction of the new techniques are secured through the increased competence of the agricultural workers and the correct application of chemicalization facilities and other elements of the intensification of farming. The role of the production engineer is growing. He controls the process of formation of the harvest and provides for the timely performance of operations, proceeding from the specific conditions of the given field. Precise and complete observance of technological discipline is being brought to the fore.

For this reason active training of the personnel is under way. The forms and methods of training are changing. The retraining of specialists is geared to an extension of the knowledge of the biology of plants and methods of controlling their growth and development. Particular attention is being paid to an enhancement of the level of training of machine operators and forms of



practical training, which is being transferred from the classroom directly to the field.

The successful application of the new techniques and realization of latent potential in full will depend to a considerable extent on the prompt solution locally of questions of procedural, organizational and material-technical support. It is expedient for this to organize on the basis of research establishments and the foremost farms science-production and production systems for the practical realization of the new economic approaches to the application of progressive techniques of the production of agricultural products. Organizational and technological leadership of the system should be exercised on the basis of the principles of cost accounting and the mutual concern and responsibility of the enterprises and organizations incorporated therein.

The main thing now required for the further assimilation of intensive techniques is to continue the upgrading of the mechanism of the economic interest of the farms, rayons, oblasts and krays in an increase in the grain harvests. A number of farms has in recent years displayed an underestimation of the growth of grain production and a non-state-minded dependent approach to this question. Instead of an increase in grain production, they have aspired to obtain forage grain from state resources. As a result there was a decline in the 11th Five-Year Plan in the sown areas of cereals in the country. In many republics the grain field proved less than recommended by scientifically substantiated farming systems: by 2 million hectares in the RSFSR, for example, 500,000 hectares in the Ukraine and 400,000 hectares in Kazakhstan.

The transition to plans of grain purchases stable by year of the 12th five-year period is the sure basis of the development of the initiative of the local authorities pertaining to self-sufficiency in seeds and forage grain. A new approach is needed in planning and organizing work to ensure that the fixed plans of state purchases stimulate a growth of grain production to cater for the farm's on-farm needs.

The development of the farms' independence presupposes simultaneously an increase in the responsibility of their leaders both for fulfillment of the state plan for purchases of grain and for catering for their own need therefor. The task of a restructuring of planning work for the purpose of determining for each grain-producing farm a plan for grain supplies which is taut, but feasible in terms of volume and selection is being advanced as a priority at the center and locally. For an increase in the production thereof locally it is essential to make fuller use of the possibilities provided for by the CPSU Central Committee and USSR Council of Ministers decree "Further Improvement of the Economic Mechanism of Management in the Country's Agro-Industrial Complex" and competently apply under specific conditions the measures of economic incentive, at the same time continuing the quest for new effective stimuli of the growth of the productiveness of the grain field.

An improvement in the planning of grain production based on the normative method with regard for the economic appraisal of the land, degree of provision with production capital and labor and other resources, the determination of scientifically substantiated, equally taut plans and a strengthening of the

mechanism of interest and responsibility will prompt the farms economically to produce more grain, oil seeds, groats and other crops and, consequently, apply intensive techniques more extensively.

#### FOOTNOTES

1. "Material of the CPSU Central Committee Plenum, 16 June 1986," Moscow, Politizdat, 1986, p 30.
2. "Intensify the Restructuring, Augment Work". "Digest of Material on M.S. Gorbachev's Trip to the Kuban and Stavropol 17-19 September 1986," Moscow, Politizdat, 1986, p 26.

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